NOVICE PHYSICIAN ASSISTANT TRANSFER OF LEARNING DURING THE TRANSITION TO CLINICAL PRACTICE: A MIXED INTERPRETIVE STUDY

A Dissertation

by

JAMES GLENN FORISTER

Submitted to the Office of Graduate and Professional Studies of
Texas A&M University
in partial fulfillment of the requirements for the degree of

DOCTOR OF PHILOSOPHY

Chair of Committee,	Dominique T. Chlup
Co-Chair of Committee,	Elsa González y González
Committee Members,	Mary Alfred
	Patricia Goodson
Head of Department,	Frederick Nafukho

May 2015

Major Subject: Educational Human Resource Development

ABSTRACT

This dissertation explored the experiences and perceptions of novice physician assistants (PAs) in Texas. The purpose of this sequential mixed interpretive study was to describe transfer of learning in novice PAs as they transition from formal training into clinical practice. Transfer of learning models and adult experiential learning theories guided the investigation.

The mixed study design combined a naturalistic multicase study with Q methodology. In Phase 1, I obtained data from 10 novice PAs using semistructured interviews and observation. In Phase 2, I obtained data from 15 additional novice PAs by having them sort 45 statements derived from the Phase 1 interviews. Each participant group contained PAs working in primary care and specialty practice across a variety of settings.

I conducted a thematic analysis of the Phase 1 qualitative data and a by-person factor analysis of the Phase 2 sorted data. Seven main themes emerged in Phase 1: (a) direct transfer, (b), transfer failure, (c) indirect transfer, (d) individual transfer facilitators, (e) work environmental transfer facilitators, (f) individual transfer inhibitors, and (g) work environmental transfer inhibitors. In addition, three factors (i.e. shared social perspectives) emerged in Phase 2: (1) transfer partnership, (2) self-reliant, and (3) insecure. The study revealed important similarities and differences in transfer of learning among novice PAs during the transition to practice. PA educators, supervising physicians, and clinic administrators may use these findings in practice and policy-

making. This study is of value to researchers interested in mixed interpretive study design using Q methodology or those wishing to explore transfer of learning in clinical settings.

DEDICATION

I dedicate this dissertation to my wife Charlotte and my son Kevin. Your love and support mean everything to me! This dissertation follows many other steps in my academic and professional journey. You have sacrificed so much for me over the years. I am deeply grateful for your understanding and patience. Alas, the time has passed and this step in the journey is complete. I am delighted to share this accomplishment with you!

ACKNOWLEDGEMENTS

I extend my utmost gratitude to my committee co-chairs, Dr. Dominique Chlup and Dr. Elsa González, and committee members Dr. Mary Alfred and Dr. Patricia Goodson. This unique group of scholars provided the personalized guidance and feedback I needed to produce this dissertation. Thank you for inspiring me to be a socially conscious adult educator and scholar.

I appreciate all of novice PAs who participated in this study. Your willingness to share your experiences was critical to the research. I wish each of you continued clinical success. I would also like to thank the PA program directors in Texas that helped recruit the study participants.

I am grateful for the assistance of Margaret Foster, Systematic Review Coordinator at the Texas A&M Library. I thank Jessica Erfan, PA-C and Yunius San Nicolas, PA-C for piloting my Q set. I also appreciate the assistance of Dr. Noori Akhtar-Danesh who served as my peer-reviewer for Q methodology.

In addition, I would like to acknowledge Dr. Jill Zarestky and Dr. Cathy Cherrstrom, my supportive peers at Texas A&M. Thank you for sharing this academic journey with me.

Lastly, I wish to credit Dr. Dennis Blessing, Dr. Richard Rahr, and Dr. Gene Jones-- my PA and research mentors for many years. I thank you for being outstanding models of humanity, integrity, and professional excellence.

NOMENCLATURE

PA	Physician Assistant
NP	Nurse Practitioner
RN	Registered Nurse
AAPA	American Academy of Physician Assistants
APPAP	Association of Postgraduate Physician Assistant Programs
PAEA	Physician Assistant Education Association
NCCPA	National Commission on the Certification of Physician Assistants
ARC-PA	The Accreditation Review Commission on Education for the Physician Assistant, Inc.
H&P	History and Physical Examination
CME	Continuing Medical Education
ER	Emergency Room
ICU	Intensive Care Unit

TABLE OF CONTENTS

Page

LIST OF FIGURES

Page

LIST OF TABLES

Page

CHAPTER I

INTRODUCTION

Physician assistants (PAs) are providing a larger portion of the clinical work previously reserved for physicians (Cooper, 2007). These professionals learn medicine over a shorter period than physicians. On average, formal PA training occurs over 26 months, including 54 weeks of classroom instruction and 52 weeks of clinical instruction (Physician Assistant Education Association, 2014a). In contrast, medical school lasts four years and is followed by a residency period usually lasting three to five years (American Medical Association, 2015). Because the vast majority of PAs do not complete a residency, an intensive learning period must occur in the workplace during early clinical practice. In addition, PAs work in many different specialties and must be able to transfer learning from their generalist-training program into a variety of clinical contexts. Therefore, transfer of learning is the ultimate goal of PA adult educators and is the focus of this dissertation.

Most PA education research has been conducted on students during the formal training period (Hocking, Crowley, & Cawley, 2013). Little is known about transfer of learning in novice PAs during the transition into clinical practice. What is known comes from two surveys of novice PAs, one with a 10% response rate (Marincic & Ludwig, 2011), and another with a 16% response rate (Polansky, 2011). Marincic and Ludwig (2011) found many self-perceived knowledge and skill deficiencies among novice PAs. Polansky (2011) found "when faced with a gap in knowledge to address a patient issue,

subjects [novice PAs] reported asking a supervising physician [for help] 46.5% of the time" (p. 47). The information provided by these two surveys is limited. Therefore, transfer of learning among novice PAs requires additional investigation.

The purpose of this sequential mixed interpretive study was to describe transfer of learning in novice PAs as they transition from formal training into clinical practice. The findings of this study fill a gap in the current literature about novice PA practice. The results inform the discussion about the length and adequacy of PA training. The investigation combined naturalistic mulitcase study and Q methodology. The inquiry was conducted in two phases with two parallel groups of novice PAs purposefully selected from Texas.

In this chapter, I provide background information about the PA workforce to demonstrate why this investigation is timely. I also discuss PA practice, supervision and training to contextualize the study. I provide an overview of my guiding theoretical framework along with the research problem, purpose, and questions. I also introduce the methodology I used to answer the research questions. At the conclusion of the chapter, I discuss the significance of the study and provide key definitions to enhance clarity.

Background and Context

Expansion of the PA Workforce

The National Commission on Certification of Physician Assistants (2014a) reports 95,000 PAs are certified in the United States. The size of the PA workforce is increasing as team-based care models replace the traditional physician-centric care model. With the advent of the patient-centered medical home, 75% of medical groups

expect increased PA involvement (MediMedia, 2012). Some clinics are replacing physicians with PAs (Okie, 2008). The Bureau of Labor Statistics projects job growth at 38% for PAs through 2022 (Bureau of Labor Statistics, 2014).

To meet market demands, the pipeline of PA graduates has expanded. Between 2008 and 2013, the number of PA training programs increased by 18% and the average student capacity of PA programs increased by 17% (Glicken & Miller, 2013). The total number of PA programs in the U.S. has increased from 154 in 2011 to 190 in 2015 (ARC-PA, 2015; Physician Assistant Education Association, 2013). In 2012, the number of new PA graduates reached a historic high of 6,255 (Physician Assistant Education Association, 2014a). Figure 1 displays the growth in both the total number of graduates and the mean number of PA graduates per program between 1984 and 2012. This rapid expansion guarantees a large number of novice PAs will enter the workforce over the next decade—further emphasizing the importance of this study.

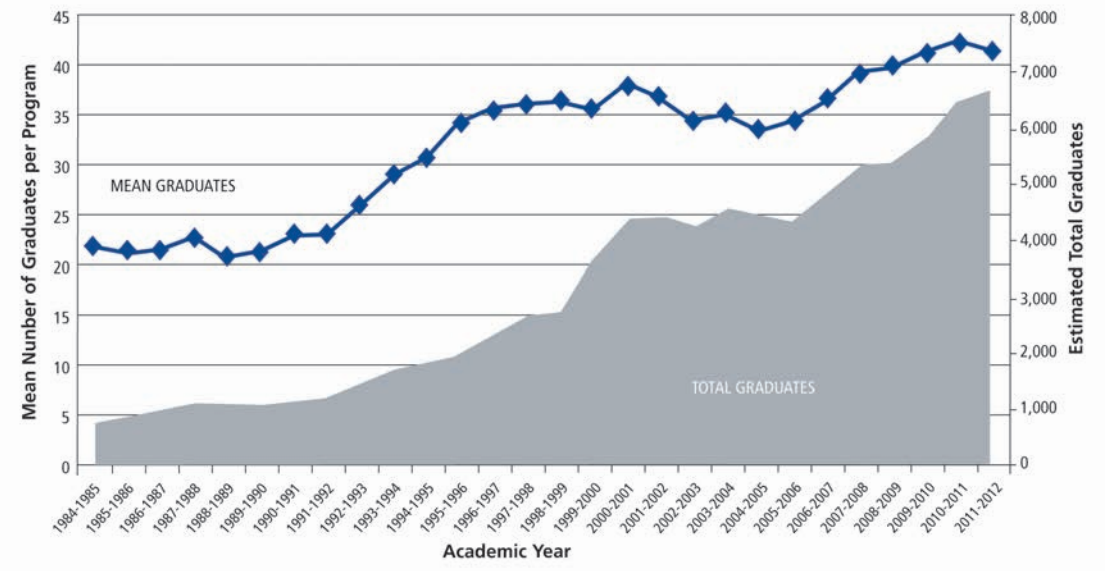


Figure 1. *PA Graduates 1984-2012*
From "Twenty-Eighth Annual Report on Physician Assistant Educational Programs, 2011-2012" by the Physician Assistant Education Association, April, 2014. Copyright PAEA, 2014a. Reprinted with Permission.

PA Practice

The PA profession originated at Duke University in 1965 (Cawley, Hooker, & Asprey, 2010a). The profession's founders hoped to advance the skills of experienced veteran medical corpsmen in civilian physician practice settings (Cawley et al., 2010a). Currently, however, only 3% of PA students have health care related military experience (PAEA, 2014b). Originally, PAs were expected to increase patient access and augment clinical practice by acting as physician extenders. Even in the early days of the profession, some PAs felt uncomfortable with the duties delegated to them by physicians (Perry III, 1978). Over the years, the PA role has evolved from a dependent technician to a semiautonomous clinician (Cawley et al., 2010a). The relationship between the PA

and physician has been described "as *negotiated performance autonomy* reflecting the continuing evolving delegation of medical tasks from physician to PA based on mutual understanding and trust in their respective professional roles" (Hooker, Cawley, & Asprey, 2010c, p. 7).

PAs follow the practice patterns established by physicians. Sixty-seven percent of PAs work in specialty practice, and 33% of PAs work in primary care (Glicken & Miller, 2013). In addition,"36% [of PAs] practice in two or three different areas [of medicine]" (Glicken, 2014, p. 49). For example, a PA may work in a family practice clinic during the week and moonlight in the ER on weekends. Although PAs work an average of 41 hours per week, 37% are on call after hours (Glicken, 2014). The work is demanding, as PAs see an average of 90 patients per week (Glicken, 2014; Hooker, Cawley, & Asprey, 2010a). By comparison, physicians work an average of 53 hours per week and see an average of 100 patients per week (The Physicians' Foundation, 2012).

PAs take medical histories, perform physical examinations, order lab tests, make diagnoses, prescribe medications, perform procedures, and educate patients. The routine primary care provided by PAs is comparable to physicians in terms of health outcomes, resource use, and patient satisfaction (Jacobson & Jazowski, 2011). Patient acceptance of PAs has been consistently reported as high (Halter et al., 2013; NCCPA, 2014a). One survey found 94% of patients are willing to see a PA for care (NCCPA, 2014a). When working on hospital teams, PAs provide care that is equivalent to residents (Carlson, Dubaybo, & Samson, 1991; Carzoli, Martinez-Cruz, Cuevas, Murphy, & Chiu, 1994; Dhuper, 2008). Consequently, many academic medical centers use PAs in lieu of 2nd,

3rd, and 4th year medical residents (Moote, Krsek, Kleinpell, & Todd, 2011). When serving as hospital house staff, PAs have been found to provide continuity in care and reduce the length of hospital stays (Christmas et al., 2005; Miller, Riehl, Napier, Barber, & Dabideen, 1998).

Not all physicians support PA practice. Some physicians express concern that PAs are replacing physicians often without supervision (Ginde & Camargo Jr., 2010). Physician groups sometimes view PAs as intruders who threaten physician practice and patient safety. Moses and Feld (2007) outlined the potential liabilities of PA practice including inadequate supervision, inadequate examination, failure to diagnose, improper treatment, and negligent misrepresentation. McLean (2011) argues that the liability claims against PAs will likely escalate as their responsibility for patient care increases. Research has yet to completely validate these concerns. However, the Mayo Clinic found 59% of the PAs and NPs studied referred patients for specialty care without consulting a supervising physician (Lohr et al., 2013). Lohr et al. suggested large patient loads, short visits, and separate physical geography all contribute to the lack of physician supervision.

Supervision and consultation are key elements in PA practice and relate directly to transfer of learning. Unguided and unsupervised novices who do not consult with the supervising physician may have difficulty applying their prior knowledge correctly. Lack of feedback and support could further restrict novice PA transfer of learning.

Supervision and Consultation

PAs are legally required to work under the supervision of a physician in all

states. Although the precise legal requirements vary by state, the supervising physician should always be available for consultation. Even when supervising physicians are directly responsible for novice trainees, the amount and style of oversight vary between individuals and contexts. Kennedy, Lingard, Baker, Kitchen, and Regehr (2007) identified four discrete types of supervisory oversight including (a) routine, (b) responsive, (c) direct patient care, and (d) backstage. Supervising physicians may exhibit a dominant style or a combination of styles.

In routine oversight, the supervision is planned and consistent (Kennedy et al., 2007). For instance, the PA and supervising physician can meet at the end of the day and discuss each patient. In responsive oversight, a trigger is required to initiate the supervisory involvement (Kennedy et al., 2007). The supervisor can be triggered by clinical cues, other individuals, or deficits in the trainee's knowledge and ability (Kennedy et al., 2007). In direct patient care oversight, the supervisor provides services in conjunction with the trainee (Kennedy et al., 2007). In some practices, the physician sees every patient jointly with the PA at the time of the visit. The PA may complete the history and physical exam (H&P) and then present the information to the physician, who in turn makes the diagnosis and designs the treatment plan. In backstage oversight, the trainee may be unaware that supervision is occurring (Kennedy et al., 2007). For instance, the supervising physician may audit patient records and review treatment outcomes with or without the knowledge of the PA.

Although the physician is responsible for delegation and supervision, the PA is responsible for consultation. Consultation occurs when the PA seeks the advice or

approval of the supervising physician when providing patient care. According to Hooker, Cawley, and Asprey (2010b) consultation is a mostly informal process that often takes supervising physicians away from their own patient care duties. Consultations may be brief if the physician only needs to sign a prescription or view an X-ray (Hooker et al., 2010b). Conversely, the consultation may take more time if the physician must reexamine the patient or intervene in complicated cases (Hooker et al., 2010b). These aspects of PA practice must be considered during any inquiry into the informal training of novice PAs.

PA Training

PAs are formally trained in the medical model, i.e., in a similar manner to physicians. PA students must complete basic science prerequisite courses to meet admission requirements. Most PA students have earned a bachelor's degree prior to PA school. During PA training, the students take additional basic science and clinical preparatory coursework, lasting an average of 54 weeks (Physician Assistant Education Association, 2014). This didactic year is followed by a period of provisional clinical practice lasting an average of 52 weeks (Physician Assistant Education Association, 2014). On average, PA students take 108 credit hours over 26 months (Physician Assistant Education Association, 2013; Scott et al., 2012). Like medical school, the arduous educational process of PA school can result in cognitive overload. PA training includes an average of 1,920 hours of supervised clinical rotations across different specialties (Scott et al., 2012), typically in the second year. Accreditation standards indicate that clinical practice experiences should occur in family medicine, internal

medicine, general surgery, pediatrics, obstetrics/gynecology and mental health (ARC-PA, 2010).

During clinical rotations, licensed physicians, PAs, and NPs can serve as preceptors for PA trainees. The quality of PA clinical training depends on the clinical preceptors' involvement. A shortage of clinical training sites has emerged in the health professions (Glicken & Miller, 2013). Therefore, programs compete for sites. The best preceptors are courted by multiple programs and asked to take a greater number of students per year. Because all clinical preceptors have their own practice demands, burnout is common, and turnover is high. As a result, the quality of the PA clinical educational experience varies. While many clinicians provide a rich educational experience, some preceptors may only allow students to observe rather than participate in patient care. Other preceptors emphasize rapid skill development using a see-one, do-one, teach-one approach to training that gives novices responsibilities beyond their capacity (Rodriguez-Paz et al., 2009). These extremes in clinical training may impair transfer of learning in novice PAs.

Research Purpose and Questions

My review of the literature and the results of my pilot study, described in Chapter III, suggested that novice clinicians transfer learning in different ways. The purpose of this sequential mixed interpretive study was to describe transfer of learning in novice PAs as they transition from formal training into clinical practice. I compared the transfer of learning process in primary care practice environments with specialty practice environments. I documented the perceptions novice PAs had about transfer of learning

using naturalistic interviews. I expanded the inquiry using excerpts from the interviews and factor analysis to determine the pattern of shared social perspectives that novice PAs had about transfer of learning during the transition to practice.

The research questions were:

- What perceptions do novice PAs have about their transfer of learning during the transition to clinical practice?
- What are the factors facilitating novice PA transfer of learning?
- What are the factors inhibiting novice PA transfer of learning?
- What is the pattern of shared perspectives, if any, that novice PAs have about transfer of learning during the transition to clinical practice?

Theoretical and Conceptual Foundations

In this section, I provide a brief review of the concepts, models, and theories that inform my inquiry. I draw from the fields of adult education, human resource development, and medical education. I consider how transfer of learning models and adult experiential learning theories intersect.

Transfer of Learning

Transfer of learning is the ultimate goal of all adult education endeavors (Foley & Kaiser, 2013). According to Ford and Weissbein (1997) "the conditions of transfer include both generalization of knowledge and skills acquired in training to the job and the maintenance of that learning over time on the job" (p. 22). As in other professional fields, novice PAs must engage in "deliberate practice with multiple examples and feedback, both to facilitate effective transfer of basic concepts and to ensure an adequate

experiential knowledge base" (Norman, 2005, p. 425).

The transfer of learning models described by Baldwin and Ford (1988), and modified by Gitonga (2007), inform my study. Both models include learner characteristics, training design, and the work environment as factors related to transfer of learning (Baldwin & Ford, 1988; Gitonga, 2007). In my study, however, the participants had completed formal training. Therefore, I focused my investigation on learner characteristics and the work environment. Gitonga (2007) discussed individual and work environment factors related to physician transfer of learning in continuing medical education. For example, the influence of motivation, time, and practice culture can be assessed from the novice's point of view. These models are discussed further in Chapter II.

Maintaining skills and knowledge over time relates to transfer of learning. Research into physician performance indicates that diagnostic skills can decline in as little as six months without deliberate practice (Ericsson, 2004). Therefore, time in practice alone will not ensure maintenance (Ericsson, 2004). Figure 2 illustrates how cardiac examination skills can decline in physicians who do not deliberately work to improve performance. This finding is supported by a systematic review that revealed the quality of physician care often declines over time (Choudhry, Fletcher, & Soumerai, 2005). Ericsson argues that most novice professionals get to an average level of performance in a short time, but need deliberate engagement with feedback to become experts. If Ericsson is correct, there is a strong temporal relationship between practice and transfer of learning. Therefore, the amount and type of deliberate practice should be

considered when investigating transfer of learning in novice clinicians.

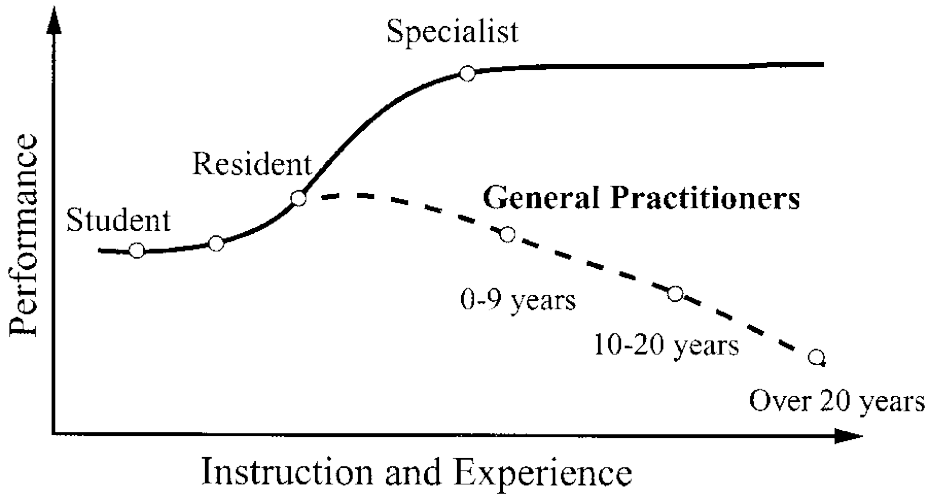


Figure 2. *Physician Performance Related to Instruction and Experience*
From "Deliberate Practice and the Acquisition and Maintenance of Expert Performance in Medicine and Related Domains" by K. A. Ericsson, 2004, Academic Medicine, 79 (10), p. S75. Copyright 2004 by Wolters Kluwer Health. Reprinted with permission.

Experiential Learning

Because novice PAs must make meaning out of their clinical experiences, adult experiential learning theories supported my study. I discuss each of these theories in more detail in Chapter II. Nevertheless, a brief introduction is warranted to demonstrate how concepts from these theories relate to each other. Novice PAs may engage in *nonreflective practices* that are reflexive; therefore, I considered concepts from Jarvis's (1987) learning theory. Novice PAs who engage in non-reflective practice may not exhibit advanced transfer of learning.

In unsupported clinical settings, novice PAs must improvise a response to

complex patient presentations. Schön's (1983) theory of *reflection-in-action* describes such activities and explains that clinicians form mental schema in the form of illness scripts used in future recall. Basic illness scripts may form during the clinical phase of formal PA education. If so, novice PAs transfer these learned schemas into novel situations.

In contrast to the two individualistic experiential learning theories mentioned above, many novice PAs learn in supportive clinical practice settings (Polansky, 2011). In such clinics, a single mentor or multiple individuals may facilitate transfer of learning. The theory that best describes the efforts of a single mentor in the clinical setting is *cognitive apprenticeship* (Collins, Brown, & Newman, 1987; Farmer, Buckmaster, & LeGrand, 1992). In cognitive apprenticeship, the senior practitioner facilitates the apprentice's learning through a process including modeling, coaching, and transfer (Farmer et al., 1992). The last phase of cognitive apprentice, called transfer, is analogous to the concept of generalization in the transfer of learning literature.

Gitonga (2007) described the practice culture as an important element related to transfer of learning. Given the prominent position the work environment plays in the transfer of learning models previously discussed, cognitive apprenticeship may provide additional details about how the overall process works.

One additional model of experiential learning, illustrated in Figure 3, considers outcomes of workplace learning in medical students who are becoming doctors. Dornan, Boshuizen, King, and Scherpbier (2007) placed supported participation at the center of a model linking experience with practical competence and positive mind states. Dornan et

al. proposed that medical students transfer learning most efficiently when there is a combination of challenging clinical interactions, clear objectives, and support. The outcomes are divided into positive mind states and practical competence. These two sets of outcomes and supported participation are reciprocal because the student does not move from passive observer to actor in performance without gaining skills and confidence. This model may also explain how PA students become PA clinicians. The supported participation in the center of the model appears similar to cognitive apprenticeship.

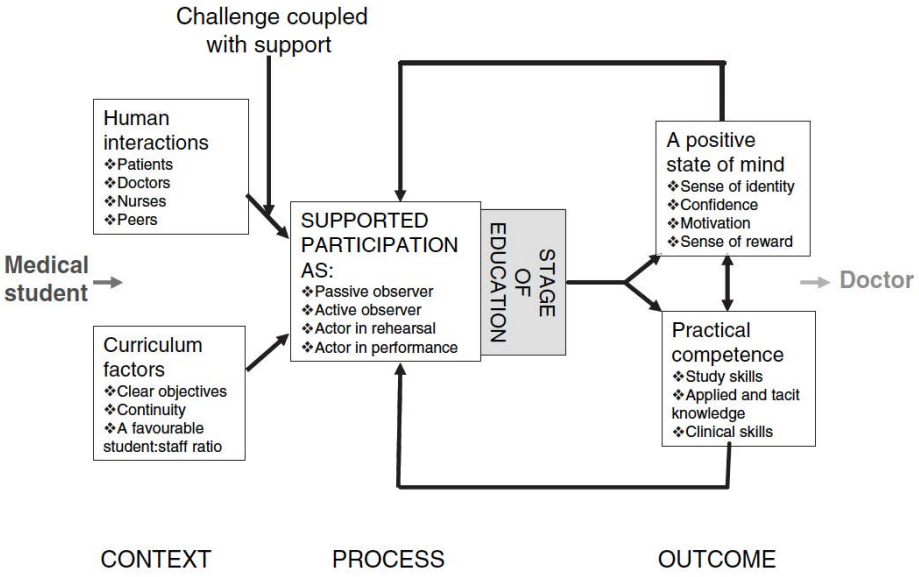


Figure 3. *Progression from Medical Student to Doctor*
From "Experience-based learning: a model linking the process and outcomes of medical students' workplace learning" by Dornan et al., 2007, Medical Education, 41, p. 89. Copyright 2007 by John Wiley and Sons. Reprinted with permission.

Links Between the Theories and Models

Furman and Sibthorp (2013) argue that experiential learning can mediate and facilitate transfer of learning in adults. Transfer of learning is enhanced when participants are supported, have role models, reflect on experiences, collaborate with others, and solve complex problems (Foley & Kaiser, 2013; Furman & Sibthorp, 2013). Many of these processes facilitating transfer appear in models and theories of experiential learning. For example, reflection is central to the theories of Jarvis (1992) and Schön (1983). Likewise, support and modeling are central concepts in cognitive apprenticeship (Farmer et al., 1992).

Ford and Weissbein (1997) suggested researchers investigate transfer of learning by focusing on the person within the situation. My study describes how learning and transfer of learning occurred from the perspective of individual novice PAs situated in different clinical settings. This conceptual framework guided my study.

Statement of the Problem

For PAs, transfer of learning is the process of taking what is learned during training into clinical practice. The PA profession is growing rapidly and producing a large number of novices who work in specialty practice, despite being trained as generalists. Because formal PA education is short, a period of extended informal learning must occur in the workplace. Supervising physicians must ensure that novice PAs transfer prior learning into practice. However, supervisory practices vary and some novice PAs may be unsupported during this critical learning period. Due to a lack of

research, little is known about the transfer of learning process of novice PAs during the transition to clinical practice.

Study Design

I used a sequential mixed interpretive study design with parallel samples of novice PAs. In Phase 1, I conducted a naturalistic multicase study using observation and semistructured interviews of 10 novice PAs. I employed stratified purposeful sampling to recruit participants from the alumni lists of Texas PA programs and from the database of PAs practicing in Texas.

Stratified purposeful sampling divides the participant group "into strata to obtain relatively homogeneous sub-groups …[and] a purposeful sample is selected from each stratum" (Onwuegbuzie & Collins, 2007, p. 286). The sub-groups were novice PAs in specialty practice and novice PAs in primary care. In order to minimize bias, I recruited participants with whom I have no former relationship in Phase 1 of the study. When permitted, I collected data and field notes at the participants' clinical sites. I used constant comparison and inductive interpretation of the interview transcripts and field notes to formulate themes and subthemes related to the research questions.

Using Q methodology (Stephenson, 1953) in Phase 2, I sampled significant statements from the interview transcripts collected in Phase 1. These statements formed a *Q set* that was piloted by two peer PA educators and sorted by a parallel group of 15 novice PAs. I selected the parallel group using the same sampling strategy as in Phase 1, although I included individuals who were my former students because the established Q set was grounded in data from Phase 1. The perspectives of each participant in Phase 2

were analyzed using by-person factor analysis. The procedural details of this analysis are covered in Chapter III. I collected field notes and conducted postsorting interviews with the participants in Phase 2. These materials aided in the abductive interpretation of the factor analysis.

Although I provide additional information about the chosen methodologies in Chapter III, Figure 4 illustrates the study's design and workflow. Once recruitment and sampling were completed, I followed these steps:

1. Observed the clinical site and collected field notes, when permitted.
2. Requested pseudonym from each participant.
3. Reviewed the study's purpose with participants and obtained written consent.
4. Conducted semistructured interviews with Phase 1 participants.
5. Transcribed interviews strictly verbatim.
6. Read transcripts along with audio recording and checked for accuracy.
7. Read field notes and made reflexive journal entries.
8. Continued an iterative process of analysis and interviewing.
9. Imported verbatim transcript files into NVivo10® for Mac.
10. Unitized the transcript data into separate unique units of meaning.
11. Coded each unit of meaning by dragging-and-dropping them to nodes--categorical placeholders for the matching participant.
12. Used NVivo10® and inductive reasoning to collapse or expand the nodes into themes and subthemes.
13. Drew a concept map in Imindmap® to illustrate graphically the thematic

structure as part of the Phase 1 inductive analysis.

14. Used the coding query in NVivo10®, to compare the results obtained in primary care and specialty settings.
15. Performed a member check of Phase 1 results by sending transcripts and relevant portions of the Chapter IV draft to each Phase 1 participant.
16. Maintained written records of any changes based on the participants' assessment of accuracy and interpretation.
17. Began Phase 2.
18. Selected a balanced subset of 45 unique statements to form a Q set to avoid repetition but cover the themes from Phase 1 broadly.
19. Printed the Q set onto 2.5" x 3" index cards and constructed as quasinormal sorting grid on a 24" x 36" white dry erase board.
20. Piloted the Q sort with first clinician peer reviewer to check performance.
21. Modified or replaced 10 ambiguous statements to create the final Q set.
22. Piloted the Q sort with a second clinician peer reviewer to check performance.
23. Scheduled sorting sessions with Phase 2 participants.
24. Explained the purpose and sorting process with Phase 2 participants and obtained written consent.
25. Conducted Q sorts with Phase 2 participants and record each sort on a scoring sheet with pseudonym identifier.
26. Watched for verbalizations, nonverbal cues, and other signs of participant difficulty during the sorts.

27. Conducted a brief unstructured post-sorting interview and asked participants identify reasons for extreme scores on the sorting grid, and to assess the representative nature of the sort.
28. Entered each individual sort into PQMethod general public license software using pseudonyms and the scoring sheets.
29. Performed by person factor analysis.
30. Conducted a parallel analysis by randomly sorting the data 1000 times to generate eigenvalues and identify possible spurious factors.
31. Selected the number of meaningful factors, shared social perspectives, from the factor matrix.
32. Generated idealized representations, factor arrays, for each shared perspective.
33. Used abductive reasoning, field notes, and post-sorting interview comments to determine how, the shared perspectives match the study's conceptual framework.
34. Related themes from Phase 1 and factors from Phase 2.

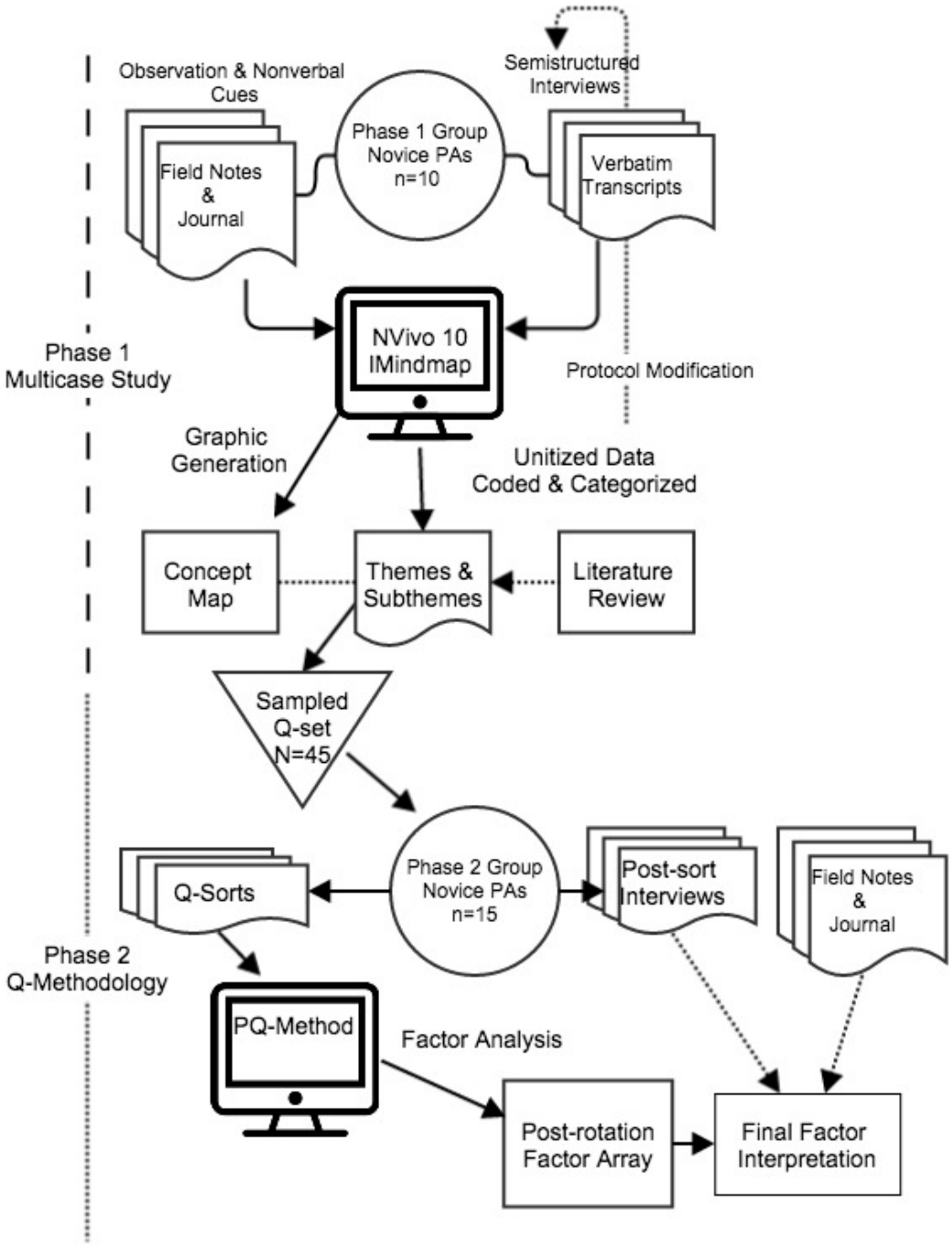


Figure 4. *Study Design and Workflow*

Significance of the Study

This study describes transfer of learning in more detail than prior studies of novice PAs, thus, filling a gap in the literature. Future novice PAs may find this information useful when preparing for their own transition into clinical practice. The findings may stimulate discussion about the novice transition among practicing PAs, physician supervisors, and clinical administrators. PA educators have the opportunity to reflect on the experience of graduates and reevaluate approaches to PA education, possibly enhancing transfer of learning in future graduates. The results of the study inform continuing discussions about the rapid training of health care professionals, the use of nonphysicians, and postgraduate PA residencies. Finally, this study serves as a foundation for other investigations that link transfer of learning and adult experiential learning theories.

Definition of Terms

By-person factor analysis: An inversion of traditional factor analysis involving "correlations between persons, rather than correlations between tests or variables" (Watts & Stenner, 2012, p. 12).

Concourse: Shared understanding in the form of statements that are context dependent (Watts & Stenner, 2012).

Cognitive apprenticeship: A model of experiential learning that involves a teacher who explicitly models cognitive processes and actions. The teacher coaches and supports the learner through a period where the learner approximates the thoughts and actions of the teacher. The support, or scaffolding, is gradually removed as the teacher

fades and allows the learner to transfer learning in novel situations (Farmer et al., 1992).

Far transfer: "The situation where information learned in school transfers to a real world (out of school) problem or learning situation" (Royer, 1979, p. 56).

Midlevel: A non-physician healthcare provider—specifically, a physician assistant (PA) or nurse practitioner (NP).

Near transfer: "The transfer of learning within the school context, or between a school task and a very similar task" (Leberman, McDonald, & Doyle, 2006, p. 4).

Novice transition: A period up to 28 months following graduation and beginning on the first day of clinical practice. The time PAs use to establish their professional identity, negotiate clinical autonomy, and apply prior learning in actual practice.

Physician Assistant (PA): " PAs are health professionals licensed to practice medicine with physician supervision" (Hooker et al., 2010c, p. 8).

Provider: also known as health care provider: A clinician such as a medical doctor, doctor of osteopathy, physician assistant, or nurse practitioner.

Q Methodology: "Q methodology is a combination of conceptual framework, technique of data collection, and method of analysis that collectively provides the basis for the scientific study of subjectivity. This is distinguished from R methodology, which provides the basis for the study of what is objective in human behavior" (S. R. Brown & Good, 2010, p. 1149).

Q Sorts: A data collection method where participants "sort cards into a number of piles that represent points on a continuum. The sorters…sort statements into categories based on their personal understanding of the concepts being investigated" (Vogt, 2005,

p. 255).

Reflection-in-action: A form of experiential learning analogous to learning by doing, in combination with reflection. Reflection-in-action includes the development of tacit knowledge that allows for an improvised response in problem solving (Schön, 1983).

Tacit knowledge: "Knowledge that enters into the production of behaviors and/or the constitution of mental states but is not ordinarily accessible to consciousness" (Barbiero, 2004, para. 1).

Transfer of learning: "…The effective and continuing application of knowledge, skills, and attitudes learned/acquired from training on the job, generalization, and subsequent maintenance of these over a certain period of time" (Gitonga, 2007, p. 1).

Summary

In this chapter, I have described the rapid growth of the PA profession resulting in a large number of novice PAs. These new clinicians must transfer knowledge from their training into patient care. Successful transfer of learning is dependent on individual factors, clinical experiences, and the practice setting.

I used a sequential mixed interpretive study combining naturalistic mulitcase methodology and Q methodology. This combined research approach provided an in depth look at how individual novice PAs transfer learning during the transition to practice. In Chapter II, I review the literature related to my conceptual framework and examine empirical studies of novice clinicians in transition. In Chapter III, I describe how I designed and implemented the study. In Chapter IV, I present the findings of my

study. Lastly, In Chapter V, I discuss the conclusions drawn from this study and the implications related to practice, theory, and future research.

CHAPTER II

LITERATURE REVIEW

The purpose of this sequential mixed interpretive study was to describe transfer of learning in novice PAs as they transition from formal training into clinical practice. The study yielded rich data about PA transfer of learning not previously reported in the literature. I describe the unique perspectives novice PAs have about the role others play in their learning during the transition from novice PA to clinical practice.

In this chapter, I provide an analysis of the theoretical literature related to my conceptual framework and synthesize findings from the research literature concerning novice clinicians in transition. The theoretical literature reviewed covers transfer of learning and adult experiential learning. In each of these areas, I provide overviews of the theories and models relevant to my study. I also relate the key premises of these scholarly works to the novice PA context.

Because the literature on novice PAs is sparse, my review included empirical studies of learning in novice clinicians similar to PAs, such as medical residents and NPs. I critically analyzed the quality of these studies and synthesized their results thematically. I aim to produce a clearer understanding of how learning is applied in clinical settings.

Conceptual Framework

As discussed in Chapter I, novice PAs must transfer the learning from school into clinical practice. Professionals must combine the knowledge and skills acquired in

training with their experiences in the workplace (Leberman et al., 2006). This process depends on individual factors and the clinical context. Therefore, transfer of learning and adult experiential learning processes intersect to create my investigational framework.

Transfer of Learning

Transfer of learning can be considered as a process, as an outcome, or both (Leberman et al., 2006). The transfer of learning process and outcomes are complex and require definition. In the remainder of this section, I provide definitional clarity and discuss the transfer of learning theories related to my study.

Investigators have approached transfer of learning from familiar philosophical perspectives such as behaviorist, cognitive, and socio-cultural (Leberman et al., 2006). These distinct traditions use different language to explain the process, leading to overlapping terms. For example, near transfer occurs "when a new [learning] situation is closely similar to the original [learning] situation" (Foley & Kaiser, 2013, p. 7). This term may be confused with low-road transfer, meaning transfer that is automatic and does not require reflection (Salomon & Perkins, 1989). Likewise, the terms far transfer and high transfer can be confused. Far transfer requires the learner to improvise a response in a situation different from the original learning condition (Foley & Kaiser, 2013); whereas, high-road transfer requires mindfulness, reflection, abstraction, and cross application (Salomon & Perkins, 1989).

To reduce definitional ambiguity, I group the prevailing transfer of learning terms into two process categories: direct and indirect. Table 1 compares direct and

indirect transfer of learning. To illustrate, a PA, who learns how to take a blood pressure measurement and interpret the results, can directly transfer this skill and knowledge across a variety of clinical contexts. The situation is always similar to the training situation: it becomes reflexive, is used frequently, and relates to other subordinate skills such as taking a pulse. Similarly, when a PA solves a frequently encountered medical problem, such as an ear infection, direct transfer is all that is required to treat the patient effectively (Norman, 2005). In contrast, a PA, who learns liver physiology in the classroom, may indirectly transfer this learning when deciding how to dose medications to a patient with evidence of liver failure. In this example, the learning situation is different, requires reflection, and demonstrates learning how to apply knowledge outside of the classroom. Novice PAs must learn how to switch from direct to indirect forms of transfer when dealing with medical conditions that are complex or rare (Norman, 2005).

Table 1. *Overlapping Terms Related to Transfer of Learning*

Direct Transfer of Learning Terms	Indirect Transfer of Learning Terms
Near –the new situation is similar to the original	*Far*- the new situation is different from the original
Low – the process is automatic or reflexive	*High* – the process is mindful, reflective, and cross-applied
Specific- the new stimulus elements are similar to the original	*Nonspecific*- learning how to learn
Vertical- prior knowledge and skills relate to subordinate knowledge and skills	*Lateral*- requires generalization from the classroom to the real world

Sources: (Foley & Kaiser, 2013; Royer, 1979; Salomon & Perkins, 1989)

Baldwin and Ford (1988) developed a model for researchers to use when examining transfer of learning. Baldwin and Ford considered training inputs, training outputs, and the conditions of transfer. The input factors included trainee characteristics, training design, and the work environment (Baldwin & Ford, 1988). Six links between the factors were identified: three influencing learning and retention of material and three resulting in generalization and maintenance of the knowledge. After reviewing 62 studies published between 1901 and 1987, Baldwin and Ford (1988) determined that trainee ability, personality, and motivation might influence transfer of learning. Peer support, supervisor support, and opportunities to apply learned knowledge and skills on the job were considered areas requiring further investigation (Baldwin & Ford, 1988).

Baldwin and Ford (1988) advised researchers to look at measures of generalization and maintenance including "how often and in what situations a trainee could reasonably be expected to demonstrate the trained behaviors or skills" (p. 95). The scholars suggested trainee maintenance of knowledge and skills follow different patterns such as:

- immediate failure to transfer;
- slow tapering;
- initial transfer followed by sharp decline; and
- increases in transfer over time on the job (Baldwin & Ford, p. 97).

Because the original model was derived from fragmented set of studies, Ford and Weissbein (1997) reviewed an additional 20 studies almost 10 years after Baldwin and Ford first published their findings. Ford and Weissbein described the three indicators of

transfer as (a) *generalization*, (b) *adaptability*, and (c) *maintenance*. Generalization occurs when the learner can "exhibit trained behaviors in response to different settings, people, and situations from those trained" (Ford & Weissbein, 1997, p. 34). Adaptability is similar to generalization, but differs when the learner uses the "trained knowledge and methods to generate new approaches and strategies" (Ford & Weissbein, 1997, p. 34). Lastly, maintenance refers to changes that occur in knowledge, skills, and behaviors over time (Ford & Weissbein, 1997).

Along with the transfer indicators, Ford and Weissbein (1997) provided suggestions for examining trainee characteristics related to transfer. According to Ford and Weissbein, examining a trainee's goal orientation and prior experience may provide insights into their learning motivation. The authors contrasted goal orientation with performance orientation. Goal-oriented learners seek mastery and form strategies to improve generalization; whereas, performance-oriented learners deal with the tasks at hand and do not necessarily seek to improve generalization (Ford & Weissbein, 1997). Furthermore, prior work experiences may impact a trainee's learning motivation. How previous work experience should be measured is a contested matter. Ford and Weissbein suggested factors, such as prior work achievement, might influence motivation.

Ford and Weissbein (1997) also advised that the effects of individual characteristics on transfer be studied concurrently with the effects of the work environment. For example, the authors stated:

Mastery oriented individuals may be more likely to try newly trained skills

> regardless of the transfer climate…while a performance oriented individual would look towards the climate of the organization for cues as to whether he/she should attempt to learn and transfer trained skills (Ford & Weissbein, 1997, p. 38).

Gitonga (2007) adapted the work of Baldwin and Ford (1988) to create a conceptual model to explain transfer of learning among physicians involved in continuing medical education (CME). Gitonga (2007) included physician "motivation to improve work through learning" (p. 3) along with other considerations of readiness as the essential learner characteristics related to transfer. She argued CME should be designed to assess learning needs, encourage self-direction, promote reflective practice, and elicit far transfer. Gitonga emphasized the importance of the clinical work environment in transfer of learning. Professional colleagues, patients, and clinic administrators may pressure clinicians to increase knowledge or improve skills through learning (Gitonga, 2007). In addition, trainees, managers, and supervisors can form a *transfer partnership* that holds learners accountable (Gitonga, 2007). According to Gitonga, the desired transfer of learning outcomes altered physician behavior and improved patient health.

Many of the elements included in the models are applicable to novice PA transfer of learning. Like Gitonga, PA educators expect graduates to use prior knowledge to improve patient health. It is possible that a goal-oriented novice PA with prior work experience would react differently in an unsupported clinical setting than a performance-oriented novice PA. Such contextual variations might result in differences in

generalization, adaptability, and maintenance of transfer. Novice PAs may respond differently to pressures from colleagues, patients, and administrators. Some PAs may become involved in transfer partnerships, while others do not.

As briefly discussed in Chapter I, different practices related to experiential learning such as modeling, coaching, and reflection can facilitate transfer (Foley & Kaiser, 2013). However, deficits in foundational knowledge, motivation, confidence, and support can inhibit transfer (Foley & Kaiser, 2013). In the next section, I review the experiential learning theories that guided my inquiry.

Adult Experiential Learning

No unified theory of experiential learning exists (Moon, 2004). Some theories focus on the individual, while others focus on social relationships. Salomon and Perkins (1998) stating, "individual and social learning . . . complement each other in a spiraling dynamic of reciprocal influences" (p. 18). I considered two of Fenwick's (2000) dominant perspectives on experiential learning—reflective and situated. From the reflective perspective, I review concepts from Jarvis's (1987; 1992) experiential learning theory. I also discuss Schön's (1983) theory of reflection-in-action. From the situated perspective, I examine cognitive apprenticeship (Collins et al., 1987; Farmer et al., 1992). Lastly, I consider the model of experience-based learning Dornan et al. (2007) created to explain how medical students become physicians.

Reflective versus nonreflective learning. Jarvis argued meaningful reflection, experimentation, and self-evaluation alter the learner's knowledge, skills, and attitudes. He also explained the difference between meaningful and meaningless experiences.

Meaningful experiences allow individuals to reflect internally and discuss externally (Jarvis, 1987). Conversely, meaningless experiences miseducate learners and keep them from building a useful stock of knowledge (Jarvis, 1987). The PA can easily assume the role of a fully dependent technician rather than a semi-autonomous clinician. Jarvis's concepts of nonlearning and nonreflective learning may help explain differences in the clinical abilities of novice PAs. Nonfacilitated clinical practice without feedback establishes the conditions for nonreflective learning. Previous knowledge and skills may not be transferred effectively and may be lost.

Jarvis (1992) argued the learning value of experience changes as a result of habitual action. He created a typology separating different actions by their ability to generate learning. Jarvis's basic premise was that learning potential decreases as action becomes more repetitive and ritualistic. After examining nursing practice, Jarvis concluded experimental and creative action with reflection is essential for learning. He criticized competency-based clinical education, stating, "the sum of all the competencies can never equal the whole of practice" (Jarvis, 1992, p. 7). PA education is competency-based. Although PA programs wish to produce PAs who are critical thinkers, PA courses such as anatomy and pharmacology require more memorization than contemplation. Therefore, some novice PAs may be habituated to nonreflective activities, such as the technical repetition seen in surgical practices. Jarvis classified such activities as nonreflective learning.

Jarvis (1992) also contended that all clinicians are prone to presumptive practices. Jarvis stated, "practitioners, upon hearing the first symptoms described by a

patient, begin to write out the prescription" (p. 4). Such nonreflective practices are common, especially when clinicians must provide care in a time-restricted manner. These activities may indicate direct transfer of learning can eclipse indirect transfer of learning in PA practice.

Reflection-in-action. Medical practice contains "complexity, uncertainty, instability, uniqueness, and value-conflict" (Schön, 1983, p. 39). Novice PAs may be unprepared for such challenges in clinical decision-making. Schön described novices as "hungry for technical rigor, devoted to an image of solid professional competence, or fearful of entering a world in which they feel they do not know what they are doing" (p. 43). He argued that some novices choose to deal only with straightforward problems, while others take on messy clinical problems "through trial and error, intuition, and muddling through" (Schön, 1983, p. 43). They learn by doing everyday practice. Schön defined reflection-in-action as an artistic and intuitive approach used to get a "feel for" practice. Novice PAs may engage in this type of experiential learning when their clinical practice is nonfacilitated and feedback primarily comes from patient outcomes.

Schön (1983) stated the practitioner "develops a repertoire of expectations, images, and techniques" (p. 60). The result is tacit knowledge. His theory accounts for why novice clinicians pursue answers to practical clinical questions (Matheson, Matheson, Saunders, & Howarth, 2010). Novice clinicians often desire immediate patient treatment results in order to validate their clinical efficacy.

Schön's theory explains the novices' reliance on *illness scripts* based on past clinical encounters (Høifødt, Talseth, & Olstad, 2007). Illness scripts are mental

representations of prior patient stories, physical presentations, treatments, and outcomes (Høifødt et al., 2007). Illness scripts allow the novice to practice through an embodied process of pattern recognition, identified as "the gut feeling" (Høifødt et al., 2007, p. 6). Reflection-in-action is a type of experiential learning that allows novice clinicians to improvise a response when patients present with unexpected findings. Improvisation is a feature of indirect transfer of learning and an indicator of generalization.

Cognitive apprenticeship. In contrast to the trial-and-error and muddling-through processes of reflection-in-action, the cognitive apprenticeship provides novices with an experienced guide who helps solve real-world problems (Collins et al., 1987; Farmer et al., 1992). This is a facilitated form of experiential learning that contains rich actionable feedback. Apprenticeships in medical education are designed to ensure patient safety while facilitating clinical learning.

Often considered a teaching method rather than a learning theory, the cognitive apprenticeship includes modeling, coaching, articulation, reflection, and transfer (Collins et al., 1987; Farmer et al., 1992). The experienced clinician models his or her behavioral and cognitive processes by interacting with the learner in a shared environment (Nickle, 2007). Coaching then follows modeling as the apprentice engages in performance (Collins et al., 1987). The novice then approximates the teacher's thoughts and actions (Farmer et al., 1992). During coaching, a process of scaffolding and fading occurs, requiring the teacher to assess the novice's needs and abilities (Collins et al., 1987). At this point, articulation and reflection allow the novice to internalize what was learned. Finally, transfer allows the learner to generalize the knowledge, skills, and attitudes in

novel situations (Farmer et al., 1992).

Transfer of learning in cognitive apprenticeship differs from traditional apprenticeship. In traditional apprenticeship, the transfer of learning is always direct. However, in cognitive apprenticeship, the transfer of learning is indirect. According to Collins, Brown, and Holum (1991), "the goal is to help students generalize the skill, to learn when the skill is not applicable, and to transfer the skill independently when faced with novel situations" (p. 3). Therefore, the presence of supported indirect transfer is key in determining if cognitive apprenticeship applies to novice PA learning.

Modeling and coaching activities alone are insufficient to meet the full definition of cognitive apprenticeship. In a study of medical student learning in the Netherlands, researchers identified problems using cognitive apprenticeship methods during clinical training (Stalmeijer, Dolmans, Wolfhagen, & Scherpbier, 2009). Stalmeijer et al. reported:

- modeling was infrequent and unexplained;
- scaffolding required time for the teacher to know the student;
- articulation was not always effective;
- reflection was not accompanied by suggestions for improvement; and
- exploration was infrequent.

Stalmeijer et al. concluded that cognitive apprenticeship methods are recognizable during medical student clerkship, but with variable penetrance. According to Pratt, Arseneau, and Collins (2001) and Spouse (2001), perhaps, the main reason cognitive apprenticeship fails is expert clinicians often have difficulty articulating how they

accomplish complex tasks.

The nature of the PA-physician relationship may differ from the trainer-trainee relationship studied by Stalmeijer, et al. (2009). The PA-physician relationship is longer in duration and may facilitate cognitive apprenticeship methods. Furthermore, the PA is a direct agent of the supervising physician and must understand the supervising physician's practice in detail. It is possible that cognitive apprenticeship explains how some novice PAs learn to generalize knowledge when caring for patients.

Medical student to doctor experienced-based learning model. As discussed in Chapter I, Dornan et al. (2007) created a learning model to explain the context, process, and outcome for medical students becoming doctors. Supported participation was described as a four-part process including (a) passive observation, (b) active observation, (c) rehearsal, and (d) performance (Dornan et al., 2007). The social form of experiential learning previously reviewed, cognitive apprenticeship, provide learners with supported participation. Dornan et al. do not describe these processes in as much detail as the other scholars cited.

The true value of this workplace-learning model is the reciprocal relationship between experiential learning outcomes and the learning process. Dornan et al. (2007) argued that supported participation concurrently produces a positive state of mind and practical competence. Furthermore, the learner is motivated, a condition that facilitates transfer of learning (Ford & Weissbein, 1997). Along with motivation, the learner builds confidence and a sense of identity (Dornan et al., 2007). Because the PA role is less recognizable than doctor or nurse, a sense of identity may be essential to facilitate

novice PA transfer of learning. Dornan et al. concluded workplace-learning outcomes represent a "complex amalgam" that can reinforce or weaken the learning process (p. 88). Researchers must determine if the clinical context and learning outcomes are reciprocal, as Dornan et al. suggest.

Research on Novice Clinicians in Transition

PAs perform many of the tasks assigned to novice physicians, interns and residents. Although medical interns and residents learn in a structured postgraduate educational program, the supervised nature of their practice is similar to PAs. Likewise, nurse practitioners (NPs) are midlevel providers with almost identical patient care responsibilities as PAs in most settings. Therefore, studies of novice PAs, novice NPs, and novice physicians are included in this review.

The literature contains three reviews focusing on the learning and/or transition of novice clinicians. Irby (1995) produced a thematic review from over 100 articles about the outpatient clinical teaching and learning of medical students and residents published between 1980 and 1994. He described a dysfunctional system where novices see a limited range of patient problems and receive minimal feedback. According to Irby (1995), "few cases are discussed with attending physicians and even fewer are examined by them. Case discussions are short in duration, [and] involve little teaching" (p. 898). Irby recommended changes to better facilitate learning such as increased learner contact with faculty, more collaborative care, and increased feedback.

In the second review, Rich, Jorden, and Taylor (2001) examined 13 studies about the NP transition to practice published between 1981 and 2001. Their review described

the first six months to one year of NP practice as a difficult adjustment period that is marked by feelings of anxiety and uncertainty. Rich et al. (2001) indicated that knowledge and skills are practiced and reinforced during the transition. However, the review provided no further exploration of how the learning process occurs.

In the third review, Teunissen and Westerman (2011) divided 73 studies of the novice physician transition into three categories: (1) the change experience, (2) the transition process, and (3) educational interventions. The authors concluded that a period of relearning, or transfer, occurs because theoretical and foundational knowledge must be applied to solve actual clinical problems. The authors explained novice physicians face the difficult task of balancing the demands of learning with the demands of patient care. In addition, novice physicians must cope with the changes occurring during the transition (Teunissen & Westerman, 2011). Other than stating novice physicians must be more self-directed in their learning, Teunissen and Westerman did not discuss the actual learning process in detail.

After finding the three prior reviews did not include PAs, I decided to conduct a search of the literature to further inform my study and to determine if any works have examined novice PA transfer of learning. The following sections of this chapter include descriptions of my literature search strategy, results and critiques.

Search Strategy

I consulted with Margaret Foster, Systematic Reviews and Research Services Coordinator at the Texas A&M University Medical Sciences Library, to develop a customized search strategy based on the approach published by Booth, Papaioannou, and

Sutton (2012). The iterative process included an initial keyword search in Medline®, followed by a scoping search using thesaurus terms to identify the scale of novice clinician learning. Some of the initial terms included "education," "learning," "mentors," and "health occupations." I also examined the bibliographies of the three published review articles discussed in the previous section. I decided to search back to the year 2000 to find empirical studies about NP practice that may have escaped or followed the review conducted by Rich, Jorden, and Taylor (2001).

My scoping search resulted in 189 articles. I reviewed the first 50 abstracts to search for relevancy. Ten of the first 50 abstracts helped me expand the number of terms needed to adjust my Medline® search strategy. I used MESH terms and truncations for education, mentoring, and learning. Using Boolean operators, I combined those terms with "health occupations," "health personnel," and "clinical competence." I included a number of associated truncated terms to define novices within the workplace.

The expanded search yielded 11,355 articles, so I added the full-text term transition and applied the date and English language limiters. The number of publications in Medline® dropped to 88. I duplicated the search to in Scopus® and CINAHL®. These databases are the principle sources of published information about medical and health professions education. The vast majority of important peer-reviewed biomedical journals are indexed in Medline® and Scopus®. CINAHL® contains additional nursing and allied health journals not indexed by Medline® and Scopus®.

I exported the 88 Medline® citations and abstracts to Refworks® and removed exact duplicates resulting in 73 unique candidates for review. My search in Scopus®

uncovered 14 additional non-duplicated documents that I subsequently exported to Refworks®. My CINAHL® search produced one non-duplicated article. I found one additional article by using the keyword "graduate" in the online search engine of the Journal of Physician Assistant Education. As a result, I reviewed 89 articles and applied the following inclusion criteria:

1. The article reported empirical primary qualitative or quantitative data.
2. The study focused on clinical learning during the transition to practice.
3. The data must have been collected from novice clinicians or individuals in a position to evaluate novice clinicians.
4. The novice clinicians studied must be at the provider level (i.e. physicians, residents, nurse practitioners, and physician assistants).
5. The articles had to be published in peer-reviewed journals.

I excluded studies based on the following criteria:

1. The study was conducted only on students and not graduates.
2. The study was conducted on nonclinicians and nonpractitioner nurses.
3. The article was an opinion piece, editorial, or nonsystematic narrative review.

Twenty-seven articles met the inclusion criteria.

Summary of Literature by Methodology

Most of the recent empirical studies about novice clinician learning in transition have been conducted on resident physicians outside of the U.S. In this series, 17 studies were conducted with qualitative methodology, 7 used quantitative methodology and 3 applied a mixed methodology. Very few studies evaluated physicians post-residency,

and only one study evaluated PA learning in transition. One additional study, however, assessed novice PA preparation for practice. Table 2 summarizes the research approaches used in the reviewed studies of novice physicians, PAs, and NPs since 2000.

Table 2. *Articles by Practitioner Type and Methodology*

Type	Quantitative	Qualitative	Mixed
NP or PA	Marincic & Ludwig, 2011 Polansky, 2011 Rosenzweig et al., 2012	Cusson & Strange, 2008 Fleming & Carberry, 2011* Heitz et al., 2004 Kelly & Mathews, 2001 Sullivan-Bentz et al., 2010*	
Resident Physician	Bansal et al., 2007* Conn et al., 2003* Trout et al., 2011	J. Brown et al., 2007* Farnan et al., 2008 Kilminster et al., 2011* Lyss-Lerman et al., 2009 O'Neill et al., 2003* Prince et al., 2004* Sagasser et al., 2012* Sheehan et al., 2012* Teunissen et al., 2007* Westerman et al., 2010* Wilkinson & Harris, 2002*	Caulley et al., 2012* Li et al., 2009
New Physician	Ochsmann et al., 2011*	Høifødt et al., 2007*	Matheson et al., 2010*

* Study conducted outside of the U.S.

Quality of Studies

I evaluated the quantitative studies based on the authors' literature review, sampling procedure, study design, statistical analysis, and generalizability. I assessed the qualitative studies based on the authors' literature review, sampling procedure, and use of accepted qualitative methods. Furthermore, I checked each of the qualitative

studies for academic rigor. Rigor in the qualitative studies was measured based on the presence of triangulation, prolonged engagement, articulated decision making, member checks, peer debriefing, and thick description (Whittemore, Chase, & Mandel, 2001). In addition, I assessed the quality of the mixed methodological studies by reviewing each research approach separately and according to the above criteria.

Overall, the qualitative studies were more robust than the quantitative studies. Roughly one half of the qualitative studies included more than five of the nine factors associated with high quality investigations as discussed by Whittemore et al. (2001). Most of the qualitative investigators described their decision-making and used verbatim transcription. However, many investigators failed to perform a literature review, did not triangulate the data, or employ member checks. Although six qualitative studies provided thick description, the remainder contained only one or two sample phrases from study participants. Sixty-three percent of the qualitative investigations obtained a purposeful sample while the remainder settled for a convenience sample. Table 3 provides a qualitative method comparison.

The quantitative studies reviewed lacked rigor. Most investigators utilized small nonrandom convenience samples and a variety of statistical analyses. In three of the studies, the authors addressed the restricted generalization caused by small sample sizes (Marincic & Ludwig, 2011; Rosenzweig et al., 2012; Trout et al., 2011). Likewise, the response rates were low for both studies that surveyed novice PAs (Marincic & Ludwig, 2011; Polansky, 2011). Additional methodological problems included lack of analysis (Rosenzweig, et al., 2012); unreported model statistics (Ochsmann et al., 2011); unadjusted multiple comparisons (Li et al., 2009); and collapsed Likert scales (Li et al., 2009; Matheson et al., 2010). Table 4 summarizes the design and analysis methods of the quantitative studies.

Table 3. *Comparison of Methods in Qualitative Studies of Novice Clinicians*

Study	Lit. Review	Sampling	Triangulation	Prolonged Engagement	Verbatim Transcript	Articulated Data Decision-Making	Member Checks	Peer Debriefing	Thick Description
Cusson & Strange, 2008	Yes	Convenience	No	No	Yes	Yes	No	Coinvestigator	Sample
Farnan et al., 2008	No	Convenience	Yes	No	Yes	Yes	No	Coinvestigator	Sample
Fleming & Carberry, 2011	Yes	Purposeful	Yes	No	Yes	Yes	No	No	Yes
Heitz et al., 2004	No	Purposeful	No	Yes	Yes	Yes	Limited	Coinvestigator	Yes
Høifødt et al., 2007	No	Convenience	No	Yes	Yes	Yes	No	Coinvestigator	Yes
Kelly & Mathews, 2001	Yes	Convenience	No	No	Yes	Yes	Yes	Yes	Yes
Kilminster et al., 2011	No	Purposeful	Yes	Yes	Yes	Yes	No	Research Team	Sample
Lyss-Lerman et al., 2009	No	Purposeful	No	No	Yes	Yes	No	No	Sample
O'Neill et al., 2003	Limited	Purposeful	No	Yes	Yes	Yes	No	No	Sample
Prince et al., 2004	Yes	Convenience	Yes	No	No	Yes	Yes	No	Sample
Sagasser et al., 2012	Yes	Stratified Purposeful	No	Yes	Yes	Yes	No	Research Team	Yes
Sheehan et al., 2012	Yes	Stratified Purposeful	Yes	Yes	Partial	Yes	Yes	No	No
Sullivan-Bentz et al., 2010	No	Purposeful	Yes	Yes	Yes	Yes	No	No	Sample
Teunissen et al., 2007	No	Purposeful	No	Yes	Yes	Yes	No	Research Team	Sample
Westerman et al., 2010	No	Purposeful	Yes	Yes	Yes	Yes	No	Research Team	No
Wilkinson & Harris, 2002	No	Purposeful	No	Yes	Yes	Yes	No	Yes	Yes
Caulley et al., 2012*	No	Convenience	No	No	No	No	No	No	No
Li et al., 2009*	Limited	Convenience	Yes	No	Partial	Yes	No	No	No
Matheson et al., 2010*	Yes	Stratified Random	No	No	Partial	Yes	No	No	Sample

* Qualitative portion

Table 4. *Design and Analysis in Quantitative Studies of Novice Clinicians*

Study	Literature Review	Sampling	Experimental Design	Data Analysis	Sample Size
Bansal et al., 2007	Yes	Convenience	Observational	ANOVA & Correlation	24
Conn et al., 2003	No	Convenience	Quasi-experimental	Repeated MANOVA	15
Marincic & Ludwig, 2011	Yes	Survey Respondents	Observational	Spearman Correlation & Kruskal-Wallis Test	98 & 46
Ochsmann et al., 2011	Yes	Survey Respondents	Observational	Chi-Square & Logistic Regression	637
Polansky, 2011	Yes	Survey Respondents	Observational	McNemar's Test & Chi-Square	1,182
Rosenzweig et al., 2012	Yes	Survey Respondents	Observational	Descriptive Statistics	104
Trout et al., 2011	No	Convenience	Quasi-experimental	T-test	19
Caulley et al., 2012*	No	Convenience	Observational	Descriptive Psychometrics	13
Li et al., 2009*	Limited	Convenience	Observational	Chi-Square	36 & 43
Matheson et al., 2010*	Yes	Stratified Random	Observational	McNemar's Test	76

*Quantitative portion

Thematic Synthesis of the Literature

Given the heterogeneous nature of the empirical studies reviewed, it is challenging to combine the results. Therefore, the remainder of this chapter is dedicated to presenting the information thematically to achieve a level of coherence. I observed five themes emerging from the literature review: (1) preparedness, (2) learning process, (3) learning aids, (4) learning barriers, and (5) learning context. The subsection titled "preparedness for practice" details what is known about PA, Physician, and NP readiness. This information provides insight into the types of learned knowledge that transfer easily and the types of learned knowledge that do not transfer easily. I then group findings related to the learning process including reflective and supportive practices identified by the prior studies. Next, I review descriptions of learning aids and learning barriers described by the literature. Finally, I highlight important aspects of the learning context identified by prior researchers.

Preparedness for Practice

The concept of preparedness for practice appears in the literature on novice clinicians. Descriptions of preparedness allow us to understand which knowledge and skill sets transfer easily into practice. After some initial time in the clinic, novice clinicians are able to reflect on what they know and what is lacking. This initial process of discovery may take place formally, with others helping to assess learning needs, or informally, through self-assessment.

Novice PA preparedness. As briefly discussed in Chapter I, Marincic and Ludwig (2011) surveyed 1,000 PA-Physician pairs to assess entry-level primary care PA

competency. The investigators planned to compare self-assessed PA competency and supervisor-assessed PA competency. Only 98 novice PAs and 46 supervising physicians completed the survey. Marincic and Ludwig speculated the low response rate could be due to the reluctance of novice PAs to reveal deficiencies. Given the small response rate, the authors acknowledged the limited generalizability of their study results. In their small sample, Marincic and Ludwig found entry-level PAs lacked confidence and ability in 15 of 31 selected PA knowledge and patient care competencies. For example, the respondents reported deficits in their ability to interpret diagnostic tests, select intravenous fluids, prescribe medications, and respond to emergent situations (Marincic & Ludwig, 2011)

Novice PAs expressed confidence in their ability to treat patients respectfully, perform H&Ps, and handle common medical conditions (Marincic & Ludwig, 2011). The survey contained a list of 18 common medical conditions such as asthma, back pain, diabetes, and hypertension. Marincic and Ludwig found the novice PAs felt they could diagnose and treat 17 of the 18 common conditions, and thus, meet the expectations of their supervising physicians.

The lack of novice PA preparedness for clinical practice was also found in Polansky's (2011) survey of 1,596 entry-level PAs. Despite her 16% response rate, the sample size allows for more generalizability than the study conducted by Marincic and Ludwig (2011). Polansky's overall number of novice PA respondents was 1,182, compared to the 98 novice PA responding to Marincic and Ludwig. According to Polansky, 35% of novice PAs felt well prepared, 56% felt somewhat prepared, and 9%

felt unprepared for clinical practice following PA school. The majority of novice PAs discovered their learning deficits informally by reflecting on their patient care (Polansky, 2011). Respondents in primary care expressed a greater level of preparation than those in specialty practice (Polansky, 2011). Given the generalist training of PAs, this finding makes intuitive sense.

Novice physician preparedness. Studies of other novice clinicians indicate lack of preparedness for practice is not unique to novice PAs. Oschman, Zier, Drexler, and Schmid (2011) surveyed 637 junior doctors in Germany and found 66% felt unprepared for aspects of clinical practice after completing medical school. The novice physicians felt most prepared to conduct H&Ps and least prepared for medication prescribing activities (Schmid, 2011). Oschman et al. identified peer support and supervisory feedback as ways to improve the novices' feelings of preparedness.

In another study of 17 new medical school graduates in the Netherlands, investigators conducted focus group interviews to gain insight about the transition to practice (Prince, Van de Wiel, Van der Vleuten, Boshuizen, & Scherpbier, 2004). The junior doctors felt their medical school training provided adequate foundational knowledge, communication skills, and the ability to perform an H&P. However, Prince et al. (2004) also found that these junior doctors felt unprepared for medication prescribing and practical aspects of patient care.

Novice NP preparedness. The lack of preparation for prescribing and specialty care among novice clinicians was also found by Rosenzweig et al. (2012) in a survey of 104 NPs practicing in oncology. The survey respondents felt prepared to perform H&Ps,

interpret laboratory tests, and document findings (Rosenzweig et al., 2012). However, Rosenzweig reported 65% of the respondents felt personally inadequate due to their gaps in knowledge. Novice NPs in the study were unprepared to manage chemotherapy, interpret diagnostic imaging, and perform oncology-specific procedures (Rosenzweig et al., 2012).

Recognizing deficits. The interviews and surveys discussed thus far include self-reported data concerning the preparedness of novice clinicians. However, Bansal et al. examined the preparedness of 24 novice surgical residents in India by assessing knowledge and skills through testing and an observed structured clinical evaluation. The investigators found "4 out of 5 new residents had a below satisfactory performance" (p. 723) and concluded that weaknesses should be identified using formal assessments before autonomy in patient care is granted. Bansal et al. also suggested that formal readiness assessments be used to foster reflection and self-direction in novice residents.

The deficits of novice clinicians may be unrecognized in school and emerge only under the stress of actual practice. Wilkinson and Harris (2002) interviewed 14 intern supervisors in a New Zealand hospital in an effort to describe the characteristics of marginal trainees. The supervisors reported these interns have problems including poor socialization, poor time management, knowledge deficits, difficulty recognizing limitations, and failure to seek assistance when needed (Wilkinson & Harris, 2002).

Overall, the findings from these studies suggest novice clinicians are prepared for some aspects of practice but not others. Because the majority of PAs train as generalists but work as specialists, they must go through a transfer of learning process during the

novice period. Perhaps novice PAs initially rely on their basic medical knowledge and H&P skills as a foundation for additional learning.

Learning Process

Once knowledge and skill deficits are identified, what does the literature say about the learning process of novice clinicians? What evidence supports reflection-in-action and cognitive apprenticeship as foundational to novice learning in clinical settings? What conclusions can be drawn about the transfer of learning during the novice transition?

Reflective practices. Teunissen et al. (2007) studied 51 obstetrics and gynecology residents in the Netherlands using the reflection and experience models of Kolb and Schön as a theoretical framework. The purpose of the grounded theory design was to understand how residents learn in the workplace. The participants were asked to provide a list outlining what they had learned during the prior year and then describe how they learned the items on the list. Teunissen et al. (2007) found learning occurs by "acting; observing and copying; making mistakes; receiving feedback; reactions from patients and studying textbooks" (p. 765). These results show a mix of apprenticeship and individual reflective processes.

In another study using Kolb's theory as a framework, Caulley, Wadey, and Freeman (2012) analyzed the learning styles of 15 orthopedic residents in Canada. Caulley et al. observed, "residents demonstrated a high tendency toward the learning skill of abstract conceptualization combined with active experimentation, and a transition from action-oriented to more reflective learning style with age and

postgraduate education" (p. 196). If this is true for novice PAs, then learning in the novice period may differ from learning in later clinical practice.

Other sources conclude that clinical learning is usually informal and must be self-directed (Li, Favreau, & West, 2009; Sheehan, Wilkinson, & Bowie, 2012). Li et al. (2009) surveyed 36 residents and 43 faculty members in a pediatric residency program regarding self-assessment and self-directed learning. Less than half of the residents reported self-assessment or self-directed learning (Li et al., 2009). Senior residents participated in self-directed learning more often than interns (Li et al., 2009). The researchers concluded that novice physicians must learn how to self-assess and self-regulate learning and continue the process throughout their career.

The role of others in learning. The main purpose of Polansky's (2011) study "was to investigate the methods PAs use during their initial phase of workplace learning and determine which methods are deemed most effective by PAs" (p. 43). Her study is the only one that specifically addressed novice PA learning after graduation. In Polansky's study, 75% of the respondents identified the supervising physician as a learning facilitator and 53% identified other PAs as learning facilitators. The facilitators provided practice tips, observation opportunities, hands-on instruction, and articles to read (Polansky, 2011). The survey respondents identified observational activities and review of online materials as the most helpful learning methods. In addition, Polansky found:

> When faced with a gap in knowledge to address a patient issue, subjects reported asking a supervising physician 46.5% of the time, seeking information

themselves through reference material 21.8% of the time, and asking another PA/APN 19.5% of the time. (p. 47)

Polansky's results suggest the apprenticeship approaches of modeling and coaching are used to train some novice PAs; however, the exact nature and duration of these activities is unknown. One third of the novice PAs did not experience modeling, and more than half did not report coaching (Polansky, 2011). The medical education literature confirmed a lack of modeling and coaching during the transition to clinic. J. Brown Chapman and Graham (2007) found modeling fades quickly, leaving novices feeling unsupported.

One possible explanation for the early cessation of modeling and coaching is that physicians expect novices to acquire knowledge and skills rapidly. Rodriguez-Paz et al. (2009) suggested that experienced clinicians want to encourage the autonomy of novice learners—sometimes at the expense of patient safety. Another possible explanation is that novice clinicians may stop seeking assistance because they want to demonstrate their ability to practice autonomously.

Farnan et al. (2008) conducted a qualitative study of 42 medical residents at the University of Chicago to determine how novices deal with uncertainty during clinical decision-making. The investigators analyzed 18 critical incidents, including one death, resulting from resident uncertainty during patient care. The novices had difficulties with knowledge deficiencies, procedural skills, diagnostic decisions, and care transitions (Farnan et al., 2008). The residents often failed to seek attending-level advice due to their unwillingness to reveal knowledge gaps, fear of repercussions, and loss of

autonomy (Farnan et al., 2008). The residents followed "a 'hierarchy of assistance,' using colleagues and literature for initial management, followed by senior residents, specialty fellows and, finally, the attending physician" (Farnan et al., p. 122). These findings suggest that peers facilitate resident physician transfer of learning more often than experienced supervisors.

Høifødt et al. (2007) conducted a phenomenological study of 13 novice physicians in Norway. The purpose of the study was to examine the learning process of novice psychiatrists when they encounter suicidal patients. Reflection-in-action, apprenticeship, and participating in a community were identified as forms of experiential learning in the study (Høifødt et al., 2007). The participants reported peers are a valuable learning resource because they are easier to approach with a problem, especially when emotions are involved. This finding reinforces the role of peers during the novice transition.

Sheehan et al. (2012) conducted a qualitative study of 24 junior physicians in New Zealand to better understand what is learned during the first year in the workplace. The interviews revealed novice physicians learn about tasks, management, and identity. Identity formation was described as the most challenging aspect of learning novice physicians face. The descriptions of clinical learning in the study align situated experiential learning theory. Sheehan et al. provided excerpts from the interviews that reflect resident uncertainty, knowledge deficits, interpersonal conflict, and difficulties in decision making.

Short loops and long loops. Sagasser, Kramer, and Van Der Vleuten (2012) also examined the role of supervisors and peers in novice clinician learning. The investigators conducted a phenomenological study of 21 residents at two universities in the Netherlands. The purpose of the study was to explore how residents self-regulate learning in the workplace. The investigators found two distinct types of learning processes, termed *short loop* and *long loop*. Sagasser et al. found novices use *short loops* to solve straightforward clinical problems by asking their supervisor for an immediate answer. The novices also used reference books and the Internet to solve the same types of problems (Sagasser et al., 2012). These findings correspond to the novice PA behavior previously described by Polansky (2011).

Sagasser et al. linked short loop behaviors to Schön's (1983) concept of reflection-in-action. The researchers explained novice residents use the *long loop* for "complex or recurring problems requiring more learning activities" (Sagasser et al., 2012, p. 5). When patient problems were difficult, the investigators found learners involved their peers in discussions of similar experiences.

Sagasser et al. explained that patient encounters provide the incentive to learn. They reported internal motivation, feedback, mentoring, and a positive working climate facilitate learning (Sagasser et al., 2012). This study reinforced the concepts of motivation and goal orientation as factors in transfer of learning. The researchers concluded that novice residents learn informally when prompted by an actual clinical problem they cannot solve instantly.

Learning Aids

Protocols and guidelines. Clinics and hospitals commonly provide guidelines and protocols to facilitate practice and ensure patient safety. Novices, however, do not always apply treatment guidelines or adhere to protocols. Kilminster, Zukas, Quinton, and Roberts (2011) conducted a qualitative study of 10 first-year doctors, 11 supervisors, and 13 ancillary professionals at six National Health Service sites in the United Kingdom (U.K.). The investigators reported that novice physicians are often put into unsupervised situations where learning is contextual and practices are based on the culture of the work environment. For example, Kilminster et al. indicated novice physicians engage in contingent performance and prescribe based on local preferences rather than adhering to protocols. A nurse in the study stated "I think we teach them [novice physicians] what drugs we like to use in our areas" (Kilminster et al., 2011, p. 1012). These results suggest that relationships trump guidelines and protocols. However, Prince et al. (2004) found junior doctors do use guidelines and protocols for prescribing when others are unavailable.

Workplace training. Some novices have access to formal learning opportunities such as preparatory courses, in-house training, and team conferences. What formalized instruction is needed during the transition to clinic? Secondly, are such activities effective?

Lyss-Lerman et al. (2009) interviewed 30 residency program directors at the University of California-San Francisco School of Medicine to identify the common struggles of interns and to improve the preparatory nature of the medical curriculum.

The residency directors reported interns commonly lack medical knowledge, professionalism, and self-reflective ability (Lyss-Lerman et al., 2009). The investigators found novices struggle to apply prior knowledge when making clinical decisions. Lyss-Lerman et al. recommended the fourth year of medical school include intensive coaching to help medical students integrate their knowledge and improve interpersonal skills.

Apparently, some approaches in medical school prepare novice physicians better than others. O'Neill, Jones, Willis, and McArdle (2003) interviewed 47 graduates to compare the effectiveness of an integrated problem-based learning (PBL) curriculum with the effectiveness of a traditional curriculum. The study found PBL was more effective in helping novices deal with clinical uncertainty and critical incidents.

Matheson et al. (2010) studied the value of a four-week preparatory course designed for medical school graduates in the U.K. The course included two weeks of classroom activities followed by two weeks of clinic shadowing. The investigators found that 94% of the respondents valued the shadowing while only 31% valued the classroom activities.

Another study suggested short formalized educational interventions improve novice clinical performance (Conn, Dodds, & Colman, 2003). Using a pretest-posttest design, Conn et al. examined the performance of 15 junior doctors in Australia who participated in an educational program designed to teach diabetes management. The participants demonstrated improved diabetes management skills and expressed increased confidence from two one-hour workshops. The workshop materials were created from actual patient cases and an endocrinologist served as the learning facilitator (Conn et al.,

2003). The value of such learning aids among novice PAs requires further investigation.

Learning Barriers

The literature also identifies many barriers to clinical learning including excessive work demands, inadequate support, and strong negative emotions (Malhotra et al., 2009; Sagasser et al., 2012).

Workload and time constraints. Using surveys and interviews, J. Brown et al. (2007) studied 55 residents and 29 supervisors in the National Health Service of the U.K. to assess the quality of support and supervision house officers receive in the first year. As previously discussed, shadowing is considered valuable but often fades quickly. J. Brown et al. found residents and supervisors were restricted by workload and time constraints. One interviewee remarked "You have got so much to be getting on with in the day that you don't have a chance to think about why you are doing it" (J. Brown et al., 2007, p. 656). Time pressures also inhibit transfer of learning. Another interviewee in the study by J. Brown et al. reported not being able to perform the complete H&P as elegantly or completely as in medical school because it takes too much time. Likewise, the supervisors reported that time and work pressures "limited their ability to reflect on cases with their junior staff" (J. Brown et al., 2007, p. 656). These results indicate the lack of time created by production demands is a barrier to transfer of learning.

Inadequate support and emotions. Lack of support, guidance, and feedback is a consistent finding across studies (J. Brown et al., 2007; Conn et al., 2003; Heitz, Steiner, & Burman, 2004; Kilminster et al., 2011; O'Neill et al., 2003; Prince et al.,

2004; Sagasser et al., 2012). The lack of support is accompanied by a host of negative emotions. Although novices can be excited to begin their careers, research shows stress, anxiety, self-doubt, and disillusionment are prevalent (Cusson & Strange, 2008; Kelly & Mathews, 2001; Sheehan et al., 2012; Westerman et al., 2010). Novices must immerse themselves in clinical practice despite disillusionment (Heitz et al., 2004; Ronnestad & Skovholt, 2012) and a sense of inadequacy (Rosenzweig et al., 2012).

Cusson and Strange (2008) studied 10 neonatal NPs in 21 different states in order to describe the role transition a nurse makes when becoming a practitioner. The researchers consistently found anxiety, insecurity, exhaustion, and feelings of self-doubt among participants (Cusson and Strange, 2008). They also found that novice NPs were sensitive to criticism, especially from nursing colleagues. Cusson and Strange recommended programs better prepare novice NPs for the inevitable negative emotions of the transition period.

In a similar study, Kelly and Mathews (2001) used qualitative focus group interviewing of 21 NP graduates with one to seven years of experience to understand the nature of the NP transition. The researchers found feelings of inadequacy and anxiety are common during the first year of practice and may last for years. Kelly and Mathews recommended novice NPs recognize that anxiety and feelings of isolation are normal during the transition to practice. The documented lack of support may compound the negative emotions. For example, feelings of anxiety are highest when the novice is responsible for care and assistance is not immediately available, such as on-call situations (Trout et al., 2011).

Because clinical decision-making is inherently risky, novices must be able to control their emotions. However, some emotions impair performance and inhibit learning. Impostorism has been documented in novice clinicians, including PAs (Prata & Gietzen, 2007). This condition causes persistent self-doubt (Legassie, Zibrowski, & Goldszmidt, 2008) and is antithetical to the clinical learning process described by Dornan et al. (2007).

Direct statements from several studies show unsupported novice clinicians may take significant risks when learning medicine. The following direct quotes are similar in content:

1. "You just get on with it and learn along the way" (J. Brown et al., 2007, p.657).
2. "You sort of show up one day, start to work, and work out the bugs as you go" (Sullivan-Bentz et al., 2010, p.1180).
3. You identify your own learning needs by just "figuring it out" (Polansky, 2011, p.46).
4. You cover by "bluffing that you know what to do when really you have very little idea." (Sheehan et al., 2012, p.942) and "[you] fake it till you make it" (p.942).

Such phrases reflect the problem some novices have in recognizing their limitations during the learning period (Wilkinson & Harris, 2002).

Learning Context

The literature discusses the social context of learning during the clinical

transition. Novices learn individually and as part of a healthcare team. To learn effectively, they must understand their role and feel accepted by the community. However, novice clinicians soon discover their place in the hierarchical social structure of medicine is near the bottom (Farnan et al., 2008). The nonphysicians--NPs and PAs--may have to overcome additional social resistance from those who do not identify them as advanced clinicians.

Westerman et al. (2010) found novices clarify their role, become familiar with the culture, and integrate over time. When taking on more responsibility, novice must resolve role ambiguity, gain autonomy, and learn different practice rules (Kelly & Mathews, 2001). Hoifodt, Talseth, and Olstad (2007) emphasized the value of community in building novice self-confidence and professional identity. However, these results can be difficult to achieve.

Three studies of novice NPs revealed lack of acceptance of the NP role among the professional community was a major issue (Fleming & Carberry, 2011; Heitz et al., 2004; Sullivan-Bentz et al., 2010). Novice NPs experienced obstacles in the workplace, including colleague negativity and defensive encounters (Heitz et al., 2004). Novice NPs, like PAs, frequently encounter the lack of role recognition. One participant stated, “I have to constantly educate both patients and people I work with about who I am and what I do" (Heitz et al., 2004, p. 418). Novice clinicians need to work in the context of acceptance for optimal learning to take place.

Flemming and Carberry (2011) studied 25 NPs working in intensive care in Scotland. The researchers found initial self-doubt and role uncertainty were common.

The participants had to deal with job pressures and conflicts with junior physicians concerning the NP role. Flemming and Carberry (2011) concluded "master level educational preparation and a supportive, nurturing environment is essential to promote a smooth transitional process" (p. 74).

Lastly, Sullivan-Bentz et al. (2010) studied 23 NPs and 21 co-participants in Canada to examine the NP role transition during the first year of practice. The NPs in the study reported others lacked awareness of, and respect for, the NP role. Interpersonal conflict caused one third of the participants to change employment. In addition, the participants complained about the lack of mentorship and facilitated learning. The investigators concluded that some organizations are ill prepared to receive NPs. Sullivan-Bentz et al. recommended organizations develop integration strategies to support novice NPs during the transition to practice.

Like NPs, novice PAs may struggle to gain acceptance. A lack of acceptance could demoralize the novice PA during this critically intensive learning period. Such experiences could also make social learning difficult or impossible.

Summary

In this chapter, I reviewed the theories that inform my study along with the empirical studies related to my research questions. I demonstrated how transfer of learning models and experiential learning theories intersect and form an investigational framework for the study of novice PA learning. I reviewed direct and indirect types of transfer along with the related individual and social factors known to facilitate, or inhibit, transfer. In addition, I compared supported and unsupported processes as well as

reflective and nonreflective practices in adult experiential learning.

The literature indicates that novice clinicians are generally prepared for basic clinical tasks such as performing an H&P, but often lack knowledge needed to prescribe medication and manage more complex patients. Although the learning process almost always includes some form of observation, such methods can fade, and other apprenticeship practices may not follow.

Novice clinicians often receive minimal support and guidance when beginning practice—a condition still present 20 years after Irby's (1995) review. Novice clinicians may not consult with their supervisor because of the medical hierarchy or because they fear revealing deficiencies. These clinicians occasionally "fake-it-to-make-it" in an effort to avoid negative feedback and humiliation.

Peers are often cited as more influential than supervisors during the transition to clinic. Protocols and guidelines may or may not be followed. Workload and time constraints are major barriers to learning, as are negative emotions. Finally, other members of the healthcare team may not accept nonphysician practitioners--severely limiting social learning.

A substantial gap in the literature concerns the novice PA experience. Although the literature describes the experiences of novice physicians during their residency training, the findings may or may not apply to novice PAs. Likewise, the experiences of novice NPs may, or may not, apply to novice PAs.

Most of the research in this review has been conducted in Europe and Canada using qualitative methodologies. Medical educators studying novice learning in the U.S.

have largely ignored qualitative methodologies. Although the NP experience has been studied, no interpretive studies documenting the PA experience currently exist. Furthermore, the single study of novice PA learning does not fully explain how PAs are able to work in specialty practice with only two years of general training. In the next chapter, I describe the methodology I used to address these gaps in the literature.

CHAPTER III

METHODOLOGY & METHODS

In this chapter, I relate my research purpose and questions to my research approach. I discuss my rationale for using a sequential mixed interpretive research design combining naturalistic multicase study (Lincoln & Guba, 1985; Yin, 2014) and Q methodology (S.R. Brown, 1980; Stephenson, 1953; Watts & Stenner, 2012). I include descriptions of my sampling, data collection, and data analysis methods. I discuss my researcher's role, preparation, and assumptions. I briefly review my pilot study of novice PAs. In addition, I explain how I ensured the trustworthiness of my study. I conclude the chapter by reviewing the ethical considerations, delimitations, and limitations related to my study.

Study Purpose and Research Questions

The purpose of this sequential mixed interpretive study was to describe transfer of learning in novice PAs as they transition from formal training into clinical practice. The research questions were:

- What perceptions do novice PAs have about their transfer of learning during the transition to clinical practice?
- What are the factors facilitating novice PA transfer of learning?
- What are the factors inhibiting novice PA transfer of learning?
- What is the pattern of shared perspectives, if any, that novice PAs have about transfer of learning during the transition to clinical practice?

Rationale

My research paradigm was interpretivism. This paradigm "proposes a relativist world of multiple realities that are constructed and co-constructed" (Lincoln & Guba, 2013, p. 88). I used a sequential mixed-methodological approach within the paradigm to address the research purpose and research questions. Although mixed methodology is usually associated with the pragmatic paradigm (Johnson & Onwuegbuzie, 2004), both of my selected methodologies were interpretive.

I relied on the subjective interpretation of individual experiences and explored the similarities and differences among individuals. Using multicase study, I was able to collect rich descriptions of transfer of learning in different contexts. Naturalistic case studies generate intuitive understandings, also termed naturalistic generalizations (Lincoln & Guba, 1985). I used cross-case analysis to look for important differences in transfer of learning between contexts, such as primary care and specialty practice settings (Merriam, 2009). Yin (2014) argues that a multicase design, especially when used with mixed methods, allows for the gathering of complementary data to answer complicated research questions.

My rationale for choosing Q methodology was that it holistically identifies viewpoints that represent shared constructions of reality (Watts & Stenner, 2012). Webler, Danielson, and Tuler (2009) place Q methodology in the category of discourse analysis where participants' subjective responses are used to "find underlying patterns or meanings" (p. 6). Therefore, Q methodology is ultimately interpretive (S. R. Brown, 2008). From an interpretive perspective, multiple truths are recognized and context

bound (Merriam, 2009). In Q methodology, multiple perspectives merge in a *concourse* of shared knowledge.

Each concourse is a social construct shaped by context. McKeown and Thomas (2013) defined concourses as "shared understandings…[although] meanings may differ even for a single person depending on the particular context" (p. 18). This definition aligns with the interpretive paradigm.

Furthermore, Q methodology is a hybrid methodology that uses quantitative procedures to study subjectivity (Akhtar-Danesh, Baumann, & Cordingley, 2008; McKeown & Thomas, 2013; Valenta & Wigger, 1997).

By combining these two research approaches, I was able to focus on the differences and similarities among the constructed realities of novice PAs in the study. In addition, many scholars in the field of medical education and health care value quantitative language. These methodologies were complementary because the multicase study provided the sample data used in the Q methodology. Furthermore, Q methodology assessed the transferability of the data obtained from the multicase study. The combined approach was used to enhance the readers' understanding of my research findings.

Description of the Methodology

The study was accomplished in two sequential phases with two separate parallel groups of novice PAs. In Phase 1, I conducted a naturalistic multicase study with a group of 10 novice PAs. In Phase 2, I employed Q methodology by extracting sample statements from the data collected in Phase 1. These sample statements formed a Q set,

a deck of cards manually sorted by a second group of 15 novice PAs. I examined the sorts using a unique form of factor analysis known as by-person factor analysis (Watts & Stenner, 2012). Table 5 compares the two study phases.

Table 5. *Comparison of Research Phases*

Research Component	Phase 1	Phase 2
Paradigm	Interpretive	Interpretive
Methodology	Naturalistic Multicase Study	Q Methodology
Participants	10 Novice PAs	15 Novice PAs
Sampling Method	Stratified Purposeful 2 Homogenous Subgroups	Stratified Purposeful 2 Homogenous Subgroups Confirming/Disconfirming Scheme
Instrument	Researcher	Q Set of 45 Statements
Data Collection Methods	Nonparticipant Observation Semistructured Interviews	Q Sorting Post-sorting Interviews
Software	NVivo10 Imindmap Microsoft Excel	PQMethod PQROT Stata
Data Analysis Methods	Thematic Inductive	Factor Analysis Abductive
Quality Controls	Triangulation Verbatim Transcription Member Checking Reflexive Journaling Audit Trails	Pilot Testing Member Checking Peer Debriefing Audit Trails

Each phase of the study helped answer the research questions (Leech & Onwuegbuzie, 2010). In this section, I provide an overview of the methodologies, however, additional details about the methods associated with the methodologies are provided in the methods section of this chapter. The workflow illustrated in Figure 4

depicts the activities associated with each phase of the study.

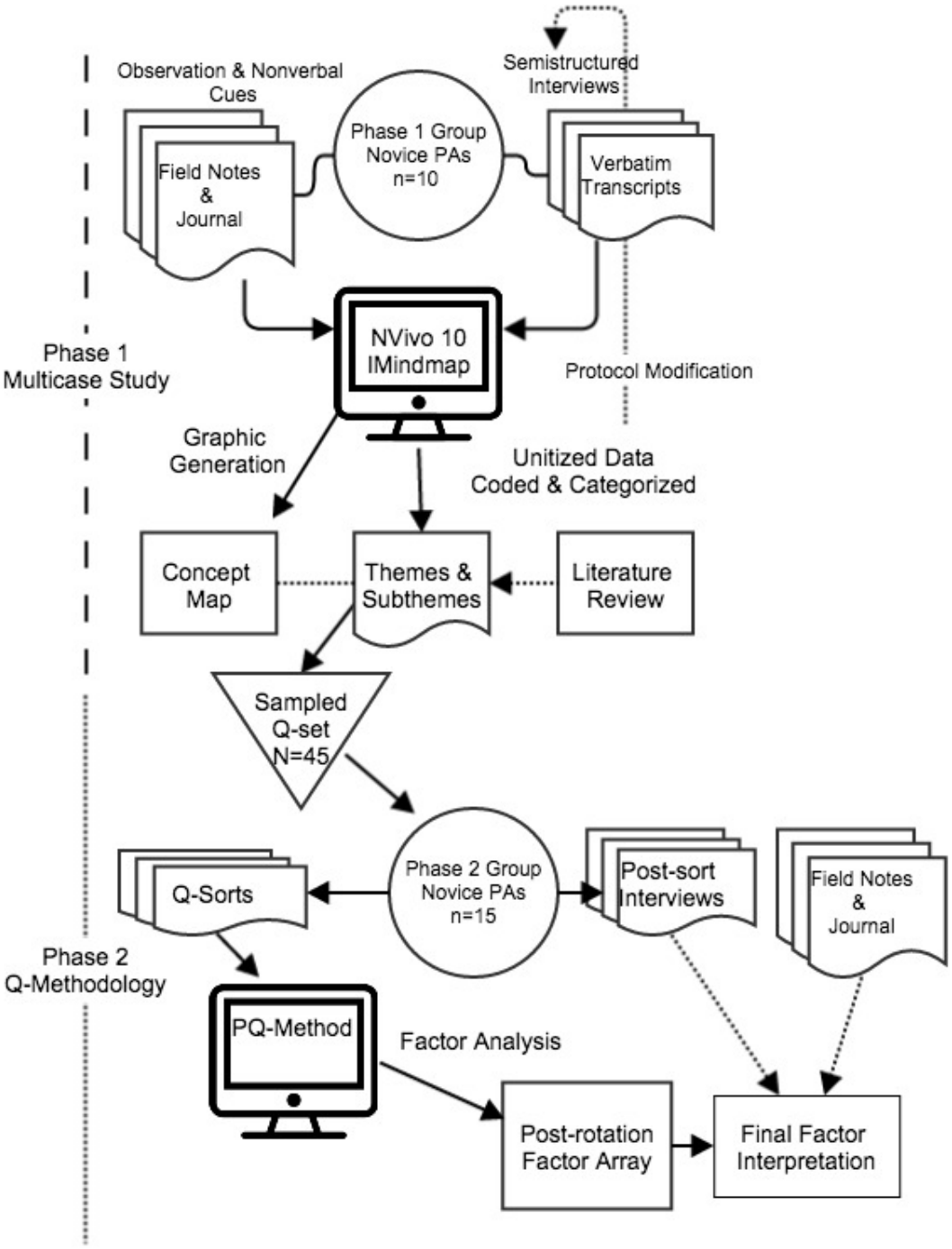


Figure 4. *Study Workflow*

Phase 1: Multicase Study

According to Naumes and Naumes (2011), the case study design allows researchers to gather information that resides beneath the surveys. As discussed in the preceding chapters, prior investigations into novice PA learning and preparation have used surveys (Marincic & Ludwig, 2011; Polansky, 2011). The descriptive statistics generated by the surveys attempted to describe the general case. In contrast, I explored the complexities of the novice PA transfer of learning process in natural settings and described the variation across cases in more detail than was provided in the prior surveys (Marincic & Ludwig, 2011; Polansky, 2011).

Yin (2014) provides a two-part definition of the case study as a research method. He describes it as " an empirical inquiry that investigates a contemporary phenomenon (the 'case') in depth and within its real-world context" (Yin, 2014, p. 16). According to Merriam (2009), case studies produce detailed context dependent knowledge. Although training in PA schools is similar, training after PA school varies by clinical setting.

Yin (2014) indicates that the unit of analysis and any spatial, temporal, or concrete boundaries define the case. In this study, the unit of analysis was individual PAs. The temporal bounding condition was novice status. The spatial bounding condition was geographic--limited to the state of Texas. These two conditions defined all of the cases within the study; however, practice site and specialty were additional conditions that separate individual PAs. Therefore, Phase 1 was termed a multicase study.

Clinician views are shaped by interactions, shared common geography, and occupational demands (de Camargo, 2002). As discussed in Chapter I, approximately one third of PAs work in primary care, and two thirds work in specialty practice (Glicken & Miller, 2013). Using a multicase study methodology, I gathered data about novice PA transfer of learning in primary care and specialty practices to explore potentially different views based on these categories.

The multicase study design incorporated different clinical contexts that varied in complexity. According to Merriam (2009), multicase studies can enhance the reader's ability to relate to the experiences described in the study. Novice PAs in primary care must determine if the transfer of learning descriptions among novice primary care PAs in the study are similar or different from their own. Likewise, novice PAs in specialty practice must ascertain if the study's descriptions apply to them.

Phase 2: Q Methodology

Q methodology quantifies subjectivity. In this study, subjectivity was defined as the reality experienced and interpreted by novice PAs based on their perceptions. Subjective statements are self-referential but also merge with the subjective statements of other individuals to form a concourse (Watts & Stenner, 2012). In addition to the theoretical definition of concourse already discussed, Watts and Stenner offer a practical definition of concourse. A concourse is "the overall population of statements from which a final Q set is sampled" (Watts & Stenner, 2012, p. 34). Although the statements in a Q set can be taken from a variety of sources including newspapers and magazines, in-person interviews conducted using focused protocols are considered the ideal source

(McKeown & Thomas, 2013). Once a Q set has been sampled, data collection and analysis can begin.

Q methodology includes a data collection method called *Q sorting* and a data analysis method called *by-person* factor analysis (S. R. Brown, 2004; Watts & Stenner, 2012). Each of these methods is covered in the methods section of this chapter. Because readers may be unfamiliar with the quantitative procedures associated with Q methodology, it is important to note how they differ from the quantitative procedures used in more traditional investigations.

William Stephenson devised Q methodology in 1935 to correlate persons rather than tests (Watts & Stenner, 2012). To clarify, the traditional factor analysis developed by Charles Spearman, called "R," makes relative comparisons between measured variables, such as tests, using correlation to uncover latent variables called factors (Meyers, Gamst, & Guarino, 2013). These latent factors cannot be measured directly; therefore, a correlation matrix of multiple directly measured variables is needed. The latent factors are produced when measured variables load, negatively or positively, in a unique factor matrix. Stephenson (1953) contrasted Q and R methodologies in the following way:

- in Q, "persons are applied to a 'sample' of statements or the like, and the correlations between the person [individual perspectives] arrays are factored.
- in R, "tests are applied to a sample of persons, and the correlations between tests are factored." (p. 51)

Webler et al. (2009) explain the difference this way: "In Q research, subjects and

variables are inverted. Thus, the 'subjects' of a Q study are the statements and the 'variables' are the people—more specifically, their Q sorts" (p. 8).

Using Q Methodology, sample statements about transfer of learning from one group of novice PAs were ranked by another group of novice PAs to determine how similar, or different, each statement was from their experiences. The degree of similarity, or the degree of difference, in rankings was ascertained using correlation. Factor analysis of the correlation matrix identified novice PAs who ranked statements in a similar pattern.

Q methodology allows the structure of the concourse about PA transfer of learning to emerge. The investigator interprets the meaning of the structure using abductive reasoning. This interpretive analysis (McKeown & Thomas, 2013; Watts & Stenner, 2012) supplemented the inductive thematic analysis of the multicase methodology used in Phase 1.

Dennis (1986) identified Q methodology as a useful tool for health care researchers. For instance, Q methodology has been used to study nursing students' views about learning from simulation experiences (Baxter, Akhtar-Danesh, Valaitis, Stanyon, & Sproul, 2009). Baxter et al. demonstrated that, although nursing students agreed that simulation facilitates learning, four unique group perspectives about simulation were present. Based on the factor analysis, the investigators described the sub-groups as "reflectors, reality skeptics, comfort seekers, and technology savvies" (Baxter et al., 2009, p. 859). The study showed how Q methodology identifies different viewpoints among participants, who at first glance, appeared similar.

Methods

Participants and Site Selection

As the study included human subjects, I submitted the study protocol and all required documentation to the Institutional Review Board (IRB) of Texas A&M University. The IRB approved the study on July 8, 2014. I followed the IRB requirements related to subject recruitment and selection.

I used stratified purposeful sampling (Creswell, 2012; Onwuegbuzie & Collins, 2007) in both phases of the investigation. The main participant selection criteria included:

1. PAs licensed by the state of Texas, and
2. A history of clinical practice lasting 12 to 28 months.

A 12 to 28 month delimited time frame allowed novice PAs enough time to understand the nature of clinical practice and the transition from formal training. The time frame was also based on descriptions from other studies of novice clinicians. Although some novices believe competency is reached within six months (Fleming & Carberry, 2011; Polansky, 2011), others believe it takes two years (Heitz et al., 2004; Polansky, 2011). Furthermore, the National Commission on the Certification of Physician Assistants (NCCPA) does not allow PAs to take any examinations to certify additional qualifications without one to two years of clinical experience (NCCPA, 2014b). The 12 to 28 month practice time frame allowed a sufficient participant population for the study.

I identified information-rich cases through stratified purposeful sampling.

Purposeful sampling is homogeneous when "individuals or sites [are selected] based on membership in a subgroup that has defining characteristics (Creswell, 2012). Novice status was the defining characteristic for the PAs sampled. Stratification within this purposeful sampling scheme allowed homogenous subgroups to be divided based on a meaningful criterion variable (Onwuegbuzie & Collins, 2007). The meaningful criterion variable for this study was dichotomous—specialty versus primary care practice. Therefore, I selected participants working in specialty and primary care settings to facilitate comparisons between these strata of novice PAs. This distinction was important because PAs may be better prepared for practice in primary care settings as a result of their generalist training. Transfer of learning may be different and more challenging for PAs working in specialty practice settings compared to primary care settings.

For the purpose of this study, primary care practice included: family medicine, general internal medicine, general pediatrics, obstetrics/gynecology, emergency medicine, occupational medicine, military medicine, and geriatrics (Cawley, Hooker, & Asprey, 2010b). Specialty practice was designated for any setting not defined as primary care. I balanced the sample by having approximately one half primary care PAs and one half specialty PAs as participants.

Gaining access in Phase 1. I recruited novice PAs who were not my former students. This approach diminished the risk of undue influence and response bias. Regional travel was required, but I found willing participants within the state of Texas by contacting the PA program directors. Because the participants were not current

students, the program gatekeepers did not violate the Family Educational Rights and Privacy Act (FERPA). I provided an IRB approved recruitment e-mail template to the program directors with my contact information and details about the study that was forwarded to program graduates meeting the study's inclusion criteria. The IRB approved the wording for the e-mails to program directors and participants contained in Appendix A. I was able to recruit and access participants from all but two of the PA programs in Texas.

Phase 1 participant selection. I interviewed 10 participants in Phase 1. As in my pilot study, 10 participants provided thematic saturation. I stratified the list of eligible participants by specialty. The specialty of the eligible participants was determined through the Texas State Medical Board website. I contacted individuals by e-mail and phone to assess their willingness to participate in the study. I discussed the voluntary nature of the study and the procedures designed to protect their personal and professional identities during data collection and reporting. With verbal or written agreement to participate, I scheduled face-to-face interviews at the practice sites, or other locations in accordance with participant and organizational access requirements. All of the participants were informed of the risks related to the study, and all signed the IRB approved Phase 1 consent form contained in Appendix B.

Site selection. Site selection was based on geographic location and accessibility as allowed by additional gatekeepers at each clinic site. Site selection was also determined by the participant selection criteria. I identified sites that corresponded to the sampling scheme for participants. All of the sites were within the geographic

boundaries of Texas.

Phase 2 participant selection. I used stratified purposeful sampling with a confirming/disconfirming scheme to select 15 additional novice PA participants, eight from primary care and seven from specialty practices. Creswell (2012) explains the intent of confirming/disconfirming sampling is to explore specific findings after initial data has been collected. The confirming/disconfirming scheme allows for "analyses to verify or contradict initial results [from Phase 1]" (Onwuegbuzie & Collins, 2007, p. 286). This purposeful sampling strategy was required due to the mixed nature of the study design. The Q sorting procedure is a type of verification process. Phase 2 participants assessed a portion of the data collected in Phase 1 of the study by completing the Q sorts and determining if the sort represented their perspective.

Traditional R-methodology requires a large number of subjects, 20 participants for every variable, or a minimum of 200 (Meyers et al., 2013). However, Q methodology uses a large number of items with a small number of participants (Watts & Stenner, 2012). S.R. Brown (1980) advised selecting "enough persons, typically no more than 40, to assure the comprehensiveness of factors" (p. 92). A set of 15 participants allows adequate examination of 45 statements (Webler et al., 2009).

The participants were also contacted using an IRB approved e-mail and study information sheet. All of the participants met the inclusion criteria, as they were all licensed PAs in Texas with 12 to 28 months of clinical practice experience. All of the participants were informed of the risks related to the study, and all signed the IRB approved consent form contained in Appendix C.

Gaining access in Phase 2. The Phase 2 participants performed a sorting activity using a Q set. Because the statements in the Q set were grounded in data from novice PAs who are not my former students, I included former students as Phase 2 participants, but not as Phase 1 participants. Using natural statements, taken mostly verbatim, in a Q set reduces researcher bias (Webler et al., 2009). This approach provided me access to an ample number of novice PAs for the study while minimizing the potential for biased responses.

Instrument

For Phase 1 of the study, I served as the research instrument (Merriam, 2009). In Phase 2, the research instrument was the Q set. Transcripts of the qualitative interviews obtained in Phase 1 were used to generate a subset of statements to form the Q set. All of the Phase 1 participants were key informants for Phase 2. Because the Q set was grounded in the original qualitative data, my design was nonexperimental. Therefore, I used a natural unstructured sampling scheme to select items for the Q Set (Watts & Stenner, 2012). I extracted statements mostly verbatim and with the intent of capturing a single idea per statement. I edited the statements for clarification and to maintain confidentiality (McKeown & Thomas, 2013). Q sets usually consist of 40 to 50 statements in order to provide coverage and allow for a manageable sorting procedure (S. R. Brown, 1980). I initially sampled 77 statements from the Phase 1 data. I then compared the wording and content of each of the statements to reduce the initial set to 45 items. Each of the statements was printed on a 2.5”x 3” index card using 12 point Times New Roman font. The cards were randomly numbered 1 through 45 and labeled.

The number label was placed on the back of the card for tracking purposes. I constructed a blank sorting grid on a 24" x 36" dry erase board.

I pilot tested the first set of items with a clinical faculty peer reviewer with extensive PA experience. Once the sort was completed, I marked the position of each card on the grid by placing the corresponding card number on the dry erase board using a temporary marker. The position of each statement was documented on the tracking form to capture the sort. The first PA faculty peer reviewer felt that the pilot sort represented her unique perspective about her own experience as a novice PA.

Following the first pilot sort, I remapped the items to check for coverage and balance. I revised five statements that confused the peer reviewer. I also replaced six items because I discovered the first Q set did not adequately represent three participants. The revised Q set provided better coverage and representation than the first Q set. The final Q set is provided in Appendix D.

A second peer PA faculty member with extensive clinical experience helped me pilot test the revised Q set. The second pilot sort was performed in the same manner as the first pilot sort. Neither of the peer reviewers had seen the content prior to the sort. The second pilot sort went smoothly and was completed in less than 30 minutes. The second PA faculty peer reviewer also felt that her sort of the items was representative of her experience transitioning from PA school to practice. The results of the two pilot sorts were positively correlated ($r=0.41$) when restricted to the 34 common statements sorted by both PA faculty peer reviewers.

Data Collection

I sought information to answer the research questions. Table 6 contains a matrix indicating the type of data needed to answer the research questions

Table 6. *Relationship of Data Collected and Research Questions*

Research Questions	Examples of Data Needed to Answer the Questions
What perceptions do novice PAs have about their transfer of learning during the transition to clinical practice?	• Descriptions of prior learning in PA school • Perceptions about preparation for clinical work • Personal accounts of complex or challenging patient encounters • Descriptions of advancing knowledge, skills, or attitudes • Self-identified changes from school to present
What are the factors facilitating novice PA transfer of learning?	• Perceptions of the work environment • Personal reflections • Reports of prior experience • Identified factors promoting practice
What are the factors inhibiting novice PA transfer of learning?	• Perceptions of the work environment • Identified factors limiting practice • Identified emotions
What is the pattern of shared perspectives, if any, that novice PAs have about transfer of learning during the transition to clinical practice?	• Q sorts of statements from the Phase 2 participants • Post-sorting explanations collected from Phase 2 participants

Phase 1 observation. I reviewed publically available information about the participants from the medical board and clinic websites prior to the encounter. The Texas State Medical Board posts data on all licensed PAs including year of graduation, school attended, supervising physician name(s), practice address, and licensure status. This information helped verify the participants' novice status and practice history. In

addition, information posted on clinic websites yielded additional contextual details related to the study. For example, clinics often create profiles of their health care providers on the web. Such profiles give prospective patients information about the way PAs practice in the clinic.

When allowed, I conducted nonparticipant observation at the clinic sites. Nonparticipant observation does not require the observer to become involved in the activities at the site (Creswell, 2012). Participant and patient privacy concerns restricted the type of observations at the site. I met with 15 of the participants off-site at their request. I met with 10 of the participants at their workplace. I took field notes of my observations. In some cases, I had the opportunity to meet supervising physicians and other staff members. I looked for environmental cues indicating inclusion in the workplace—clinic displays of the PA's name, PA business cards, and dedicated PA office space. The observation matrix is contained in Appendix E. My field observations supplemented my assessment of the research context.

Phase 1 interviewing. I scheduled the interviews directly with the study participants. In some cases, the work environment was not conducive to interviewing. For example, participants who worked in the hospital wards and emergency rooms requested off-site interviews.

I reviewed the written consent form and a statement of the study's purpose with participants before conducting the interview. The participants were given time to read the consent form, ask questions, and receive clarifications. All required signatures were obtained and a copy of the form was given to the participants. I asked the participants

to provide a pseudonym for use during the interview and for reporting.

The semi-structured interviews lasted between 45 minutes to one hour. I found this amount of time was sufficient to capture the voice of participants (Onwuegbuzie & Leech, 2007). I took notes while conducting the interviews in a semi-structured format. The interview protocol is contained in Appendix F. The protocol questions were written to minimize predetermined responses (Naumes & Naumes, 2011) and to discourage answers of deemed appropriateness (de Camargo, 2002). During the interview, I avoided interruption, but probed to elicit more information when needed (Creswell, 2012). I used the protocol questions in a flexible fashion with the intent of making the interview less formal and more conversational than other types of interviews, such as job interviews. Conversational type interviewing can minimize guarded responses intended to maintain professional reputation (de Camargo, 2002). With consent, I digitally recorded the audio portion of the interviews for verbatim transcription. All Phase 1 participants allowed audio recording.

Phase 2 Q sort administration. I used the same consent process in Phase 2 as in Phase 1. I provided verbal instructions during the sorting process. In this study, 15 Phase 2 participants sorted 45 items, creating a 3:1 ratio of items to participants (Webler et al., 2009).

The Phase 2 participants initially sorted the cards by separating them into three piles. The three piles were labeled as (1) *like my experience*, (2) *undecided*, and (3) *unlike my experience*. The participants were asked to sort the items in each pile and place them on a grid containing an inverted quasinormal distribution illustrated in Figure

5. The range provided on the grid was +5 to indicate *most like my experience* and -5 to indicate *least like my experience* (S. R. Brown, 1980). The participants then placed items in the distribution, beginning with the tails. The participants began sorting at the tails of the distribution because they are more likely to be confident of extreme judgments (McKeown & Thomas, 2013). Figure 6 illustrates the sorting procedure.

I documented verbal comments made by the participants during the sort in my field notes. I also tracked the result of each Q sort by documenting each card's unique position on the inverted quasinormal sorting grid using the tracking form in Appendix G. The quasinormal distribution illustrated in Figure 5 is considered the standard, but the procedure is robust and can generate factors even when the distribution is flattened (S. R. Brown, 1980).

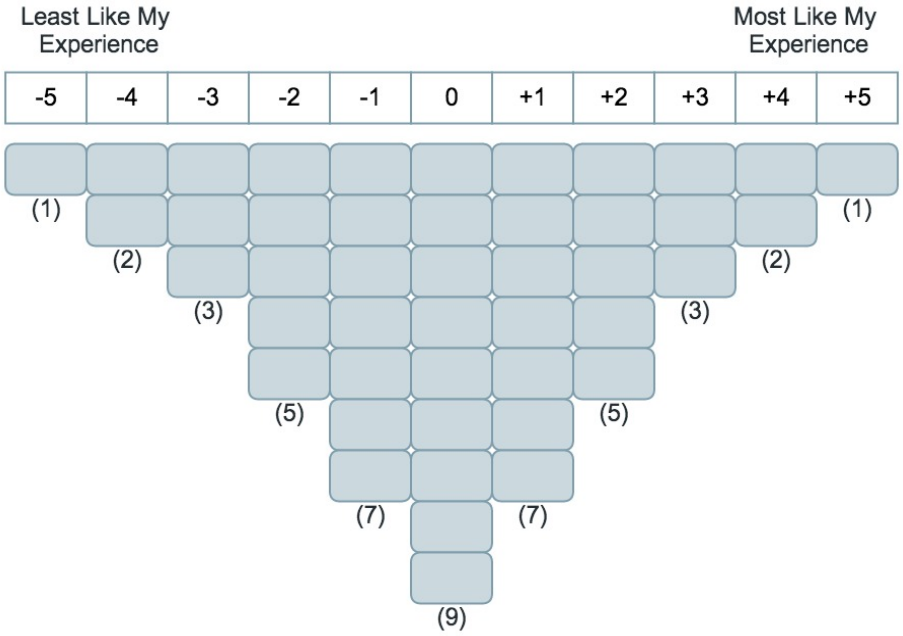


Figure 5. *Quasinormal Sorting Grid*

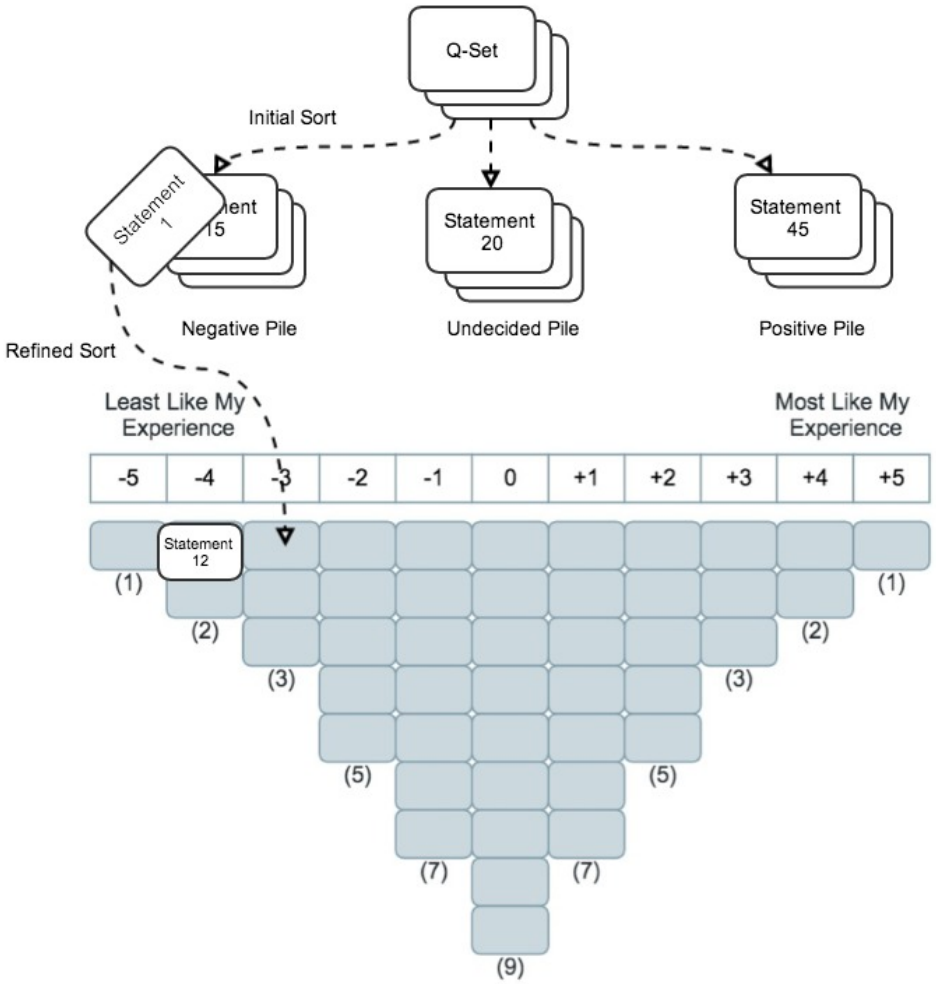


Figure 6. *The Q Sort*

Phase 2 post-sorting interviews. I conducted post-sorting interviews with each participant. Each post-sorting interview lasted 10 to 15 minutes. The rationale for using a post-sorting interview includes (a) checking for sorting errors, (b) understanding the participants' logic, and (c) enhancing factor interpretation at a later date (S.R. Brown, 1980). The post-sorting interview gave participants the opportunity to explain why "statements at the extremes of the distribution are [were] most salient" (S.R. Brown,

1980, p. 198). The post-sorting interview was a member check that allowed participants to reflect on the sort and verify its representativeness.

Data Analysis

Phase 1 analysis. I used inductive and comparative analysis to join individual pieces of meaning derived from the data collected to help answer the research questions (Merriam, 2009). I used cross-case comparison to determine if participants in primary care practice generate different themes than participants working in specialty practice. The six steps of qualitative data analysis as described by Creswell (2012) guided this first phase of data analysis:

- Preparing and organizing the data
- Exploring the data
- Code the data
- Theme development
- Representing the findings
- Validate the findings

I began by having the interviews transcribed in groups of three to four. This approach allowed the analytic process to be iterative (Creswell, 2012). To keep the material organized, I transferred the transcribed interviews into NVivo10® as source files. Lincoln and Guba (1985) suggest becoming familiar with the data. I listened to the audio from each interview as I read the final transcripts. This process allowed me to become familiar with the data and check for transcription errors. The software allowed me to work with the data in a systematic way, thus enhancing the analysis (Weitzman,

2000). I entered classifications for each source document to maintain data integrity during the analysis and to allow for subsequent data queries. I also sent full versions of the transcripts to the participants for their review and comment. None of the participants reported errors in the completed transcriptions.

I then explored each file and separated the data into distinct units of meaning– called unitizing (Erlandson, Harris, Skipper, & Allen, 1993). Each unit of data was coded within the source document by highlighting it and then dragging it to a corresponding node. A node in Nvivo10® is a placeholder for references that allows the material to be organized thematically (QSR International, 2014). A preliminary thematic structure was derived using the themes identified in the literature review. Coded units that did not match the preliminary themes were used to create new themes. Each coded piece of data was placed into a thematic placeholder (node) by making tacit judgments while comparing it to other units (Lincoln & Guba, 1985).

I analyzed the thematic nodes to determine the hierarchy and search for duplicate categories (Lincoln & Guba, 1985). I continually revised the thematic structure by visualizing the data and by using coding queries. Using a software program called IMindmap®, I explored the thematic connections graphically in a hierarchical tree diagram (Creswell, 2012). The map allowed me to visualize the thematic connections and served as a writing guide when presenting the results.

The last set of source material did not generate new themes—indicating saturation (Creswell, 2012). I deleted preliminary thematic placeholders (nodes) that did not contain coded units. I also combined redundant nodes and collapsed subordinate

nodes into parent nodes to create the final thematic structure. I cross-compared the coding of novice primary care PAs with novice specialty PAs using a matrix-coding query in NVivo10. I also sent relevant portions of my Chapter IV draft to the Phase 1 participants as a member check. The participants were asked to read their profiles and read the findings to ensure they were not misrepresented or misquoted in the research report.

Phase 2 Analysis. The goal of Q analysis is to find patterns among a group of Q sorts. If present, the patterns indicate some order exists in the subjective perceptions among the Phase 2 participants (Webler et al., 2009). This shared subjectivity is also known as a social perspective, or factor (Watts & Stenner, 2012). Q researchers can expect their study will usually generate two to five social perspectives, also called factors (Watts & Stenner, 2012; Webler et al., 2009). The statistical procedures in Q methodology described by Watts and Stenner (2012, p. 180) are applied in three sequential steps:

1. "from Q sorts to factors";
2. "from factors to factor arrays"; and
3. "from factor arrays to factor interpretations."

Extracting factors from Q sorts. I intercorrelated 15 Q sorts and conduct a by-person factor analysis using the software package PQMethod software (Schmolck, 2014). By-person factor analysis inverts the columns and rows used in traditional factor analysis. In the traditional case, measured variables constitute the columns and individuals constitute the rows. However, in by-person factor analysis, the persons

constitute the columns and the statements from the Q sort constitute the rows (Webler et al., 2009).

The software computed a correlation matrix of the participants' sorts. Q researchers must decide between two different factor extraction methods offered by the software. The two methods include principal components analysis (PCA) and the centroid method (Watts & Stenner, 2012). PCA offers the best mathematical solution; however, many Q methodologists prefer the centroid method because it is more permissive and allows for multiple solutions (S. R. Brown, 1980; McKeown & Thomas, 2013; Watts & Stenner, 2012). When a set of related variables is represented as a set of vectors, the centroid is the point through which the vectors travel, thus spatially representing the factor (D'agostino & Russell, 2005).

Once extracted, factor solutions are refined by a process called rotation (Webler et al., 2009). Rotations can be achieved using an established routine called varimax, or by hand, known as judgmental/theoretical rotation (McKeown & Thomas, 2013). An atheoretical varimax rotation "produces the factor solution that maximizes the amount of variance explained on as few factors as possible" (Webler et al., 2009, p. 11). The varimax solution is determined by statistical criteria, such as using eigenvalues >1.0 (Meyers et al., 2013).

Judgmental/theoretical rotation allows researchers to generate a more flexible solution. McKeown and Thomas (2013) note that the solutions generated by the two methods are often negligibly different. S.R. Brown (1980) states "It often happens that the computer's rotational solution is theoretically acceptable, a happy accident that saves

much time. In instances in which this is not the case, however, the investigator should feel free to pursue his [or her] own rotational solution" (p. 261). A subroutine called PQROT can be used to perform judgmental/theoretical rotation graphically (Schmolck, 2014). The PQMethod software manual guided me through each of the steps.

I manually entered each of the sorts into PQMethod 2.35 (Schmolck, 2014) using QENTER. I checked the accuracy of my data entry by ensuring that the sum and mean of each sort equaled 0. I then used the QPCA function to obtain an unrotated factor matrix. I used several criteria to select the number of factors to extract from the matrix, including the following:

- Minimum eigenvalue of 1.0 (Guttman, 1954; Kaiser, 1960) / scree test (Cattell, 1966)
- Horn's parallel analysis (Dinno, 2009; Horn, 1965)
- A minimum of two sorts per factor (S.R. Brown, 1980)

The Kaiser-Guttmann rule, scree test, and two-person loading rule, suggested a three-factor solution. I used the fapara command in Stata12® (StataCorp, 2011) to conduct a parallel analysis. The procedure produced a correlation matrix using 1000 randomly generated datasets based on my initial data. Based on the parallel analysis, factor 3 had a greater than 5% chance of being spurious because random sorting produced an eigenvalue greater than 1.29. Figure 7 shows the results obtained from the parallel analysis.

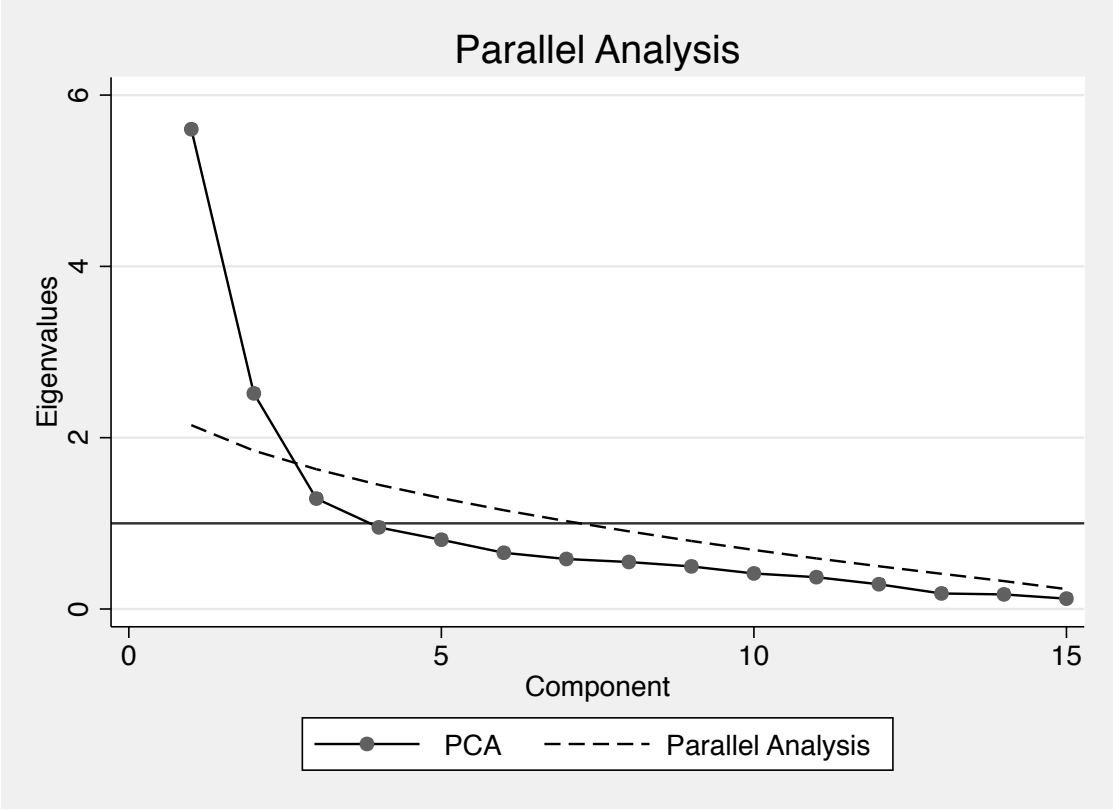


Figure 7. *Scree Plot with Parallel Analysis*

Based on the criteria, I chose to extract three factors using QVARIMAX to perform a varimax rotation. Following the rotation, I used QANALYZE to obtain the complete analysis from PQMethod. After finding two confounded sorts, I conducted a manual rotation using PQROT. I elected to remove the two confounded sorts because the manual solution was not dramatically different from the varimax solution and still resulted in cross-factor loadings.

From factors to factor arrays. Q sorts that load on the same factor identify individual novice PAs that share similar experiences and viewpoints. For each factor, I used a merged average to produce a factor array--an idealized sort representing the

combined social perspective of each subgroup of Phase 2 participants (Watts & Stenner, 2012). No fewer than two sorts defined a factor because a single sort represents a single perspective, not a shared perspective (S. R. Brown, 1980). Likewise, when an individual's sort loaded partially across factors, the sort was considered "confounded" for the purpose of analysis (Watts & Stenner, 2012).

From factor arrays to factor interpretations. My factor interpretation process included analysis of the factor arrays and the information obtained in post-sorting interviews with the Phase 2 participants. Abductive interpretation refers to a process that gives a satisfactory theoretical explanation of the facts (Douven, 2011). I used an abductive interpretive process to determine how the final idealized representations in the factor arrays were related to the theories discussed in the conceptual framework. I followed the example provided by Watts and Stenner (2012) and created crib sheets for each factor array. The crib sheets aided in the interpretation and reporting of the Q analysis. The crib sheet included the consensus and divergent statements related to each factor (Watts and Stenner, 2012). Figure 8 illustrates the format used to create a crib sheet for factor interpretation. These sheets were instrumental in determining the pattern of the participants' shared social perspectives.

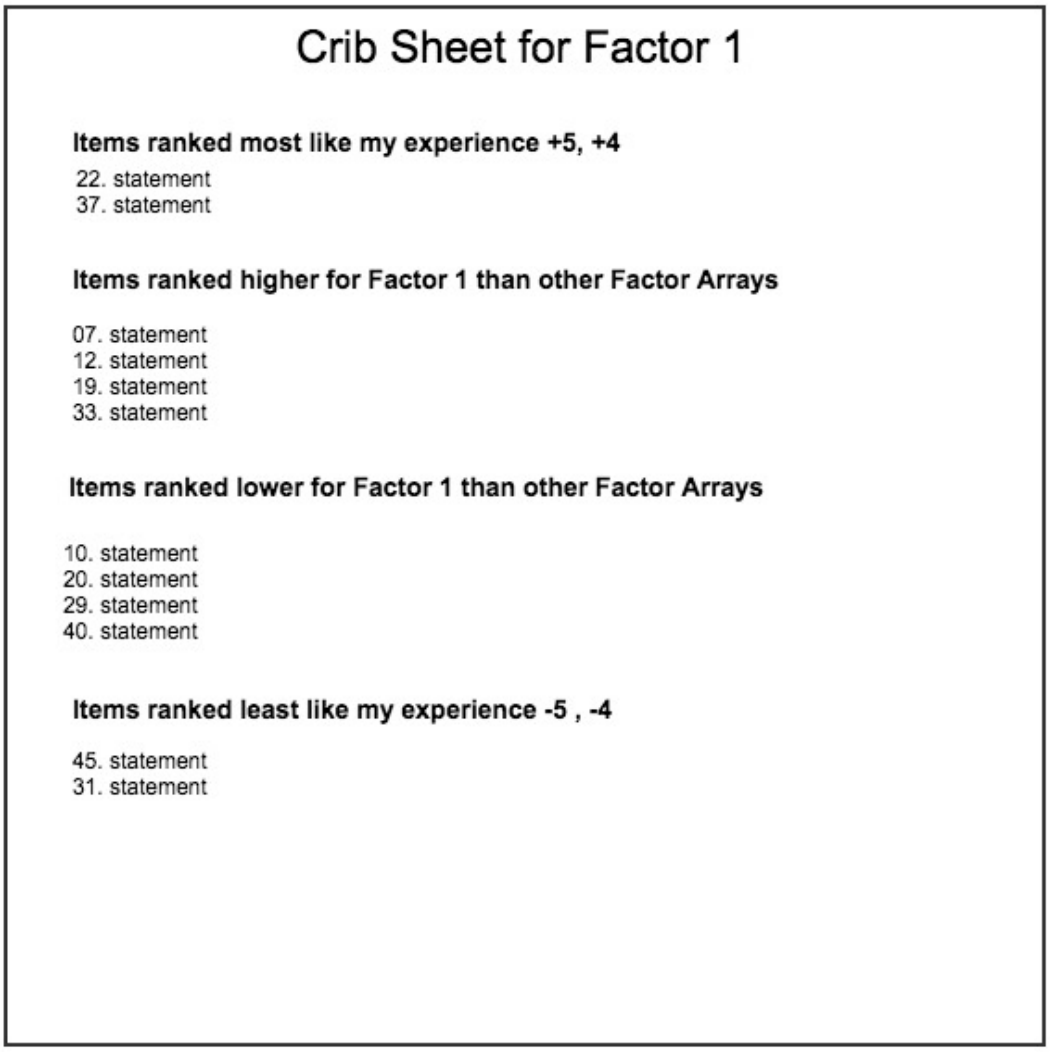


Figure 8. *Example of Factor Interpretation Crib Sheet*

Pilot Study

As part of my coursework, I conducted a pilot case study of novice PAs during the summer of 2013. Ten novice PAs participated in the study. Nine of the participants were former classmates bounded by the same PA training program and their novice status. The participants worked in different settings, equally divided between primary

care and specialty practice. Clinical site observations and semi-structured interviews provided data concerning the transitional experiences associated with the first year of practice. The interview transcripts were unitized, coded, and inductively analyzed resulting in five thematic categories. The categories included (1) role identity, (2) knowledge and skills, (3) feelings and emotions, (4) relationships, and (5) metacognition. Some of the findings of my pilot study were similar to the results reported in the novice physician and novice NP literature:

- Isolation emerged as a theme among a subgroup of participants.
- The breakdown in team-oriented care resulted from ambiguous supervision, breakdown in communication, poor patient triage practices, and time-constraints.
- The majority of the participants felt prepared for primary care practice, the focus of their training program.
- Self-identified deficiencies included billing and coding of services, dosing of medications, specialty knowledge, and dealing with complex patient presentations.
- The participants reported that their supervising physicians and peers were reliable resources for information about how to practice.
- Some of the participants reported excellent relationships with physicians consisting of trust, support, and mentorship. Other participants reported suboptimal relationships with the physicians due to miscommunication, partial engagement, unapproachability, and disrespectful treatment.

Working Hypotheses

A number of working hypotheses were derived from my pilot study and the literature:

- Some novice PAs exhibit indirect transfer of learning, while other novice PAs exhibit only direct transfer of learning.
- Novice PAs working in primary care settings transfer learning with less difficulty than novice PAs working in specialty practice.
- Some novice PAs transfer learning as a result of support from their supervising physician(s) and/or peers, while other novice PAs transfer learning without support.
- Heavy workloads, time constraints, and negative emotions are barriers to novice PA transfer of learning.

The working hypotheses provided some direction for the inquiry and served as a bridge between the current study and the prior investigations discussed in Chapter II (Erlandson et al., 1993). Naumes and Naumes (2011) caution investigators not to "allow the hypotheses to lead the research" (p. 74). The working hypotheses in this investigation were not fixed propositions subject to tests of statistical significance.

Researcher's Role and Assumptions

Researcher's Positionality

As a PA for the past 25 years, I have noticed the increasing demands of PA clinical practice. I have worked in different clinical settings, both academic and nonacademic. I have experience in surgery, family medicine, acute care, and military

medicine. When I started my career in 1990, it was clear that I was part of a team that was led by a physician. In later years, I noticed that the clinics expected me to work in a more independent fashion. The contact and collaboration with my supervising physicians lessened. The complexity of the clinical problems that I faced increased as physician support declined. The physicians that I worked with were no longer running their own practice but were employees of the clinic. Medical practice decisions became more business oriented as large corporations increased their financial stake in healthcare. In my opinion, patient care is more fragmented today than when I graduated in 1990.

As an educator for the past 14 years, I have trained PA students to accomplish many of the tasks previously reserved for physicians, such as taking a medical history, performing physical examinations, reading x-rays, interpreting labs, forming diagnoses, and designing treatment plans. PA school could not teach them everything they needed to know in practice, but I knew that they would normally have a physician to provide backup. I have worked with the assumption that my students would graduate, find a physician to mentor them, and continue learning how to provide excellent team-oriented medical care. Now, I am concerned that my assumption is often violated.

Due to increased patient loads, busy clinicians take less time to educate students and novice practitioners. Clinical teaching takes time and is mostly done on a voluntary basis. Clinical teachers do not always provide experiences that engage the learners. Some of my former students complained about clinical instructors that let them slide or left them unattended. I am concerned that novice PAs are frequently thrown into clinical situations without requisite physician support.

Research Preparation

I believe I was well prepared to conduct this study. I am a trained researcher and a prior member of the Research Institute of the Physician Assistant Education Association. I have developed national surveys of PA programs, educators, and curriculum. I have conducted prior studies in my field and have authored multiple peer-reviewed articles. I am also co-editor of a research textbook for health professionals.

To prepare for this study, I conducted the pilot study of novice PAs described earlier in this chapter. In addition, I obtained formal training in Q methodology at the 30th Annual Q Conference held in Salt Lake City, in September of 2014. Charles Mauldin, PhD, an experienced Q methodologist, and former student of William Stephenson, conducted the training.

I realize my 25 years of PA experience could be considered both an asset and a liability. Although I understand PA practice well, I may harbor preconceived notions about how other PAs should practice. My recollections of my own novice period have faded due to the passage of time. During the study, I maintained my research perspective through self-reflection and attention to the experiences of my participants.

Assumptions

For this study, I had four primary assumptions based on the literature and my professional background. The first assumption was that PAs should work in tandem with the physician when providing clinical care. Physician supervision is a legal and ethical requirement of PA practice.

The second assumption was that novice PAs often work in clinics that emphasize

production. Health care is expensive and costs must be controlled to keep the system operating. PAs are hired to help provide physician-like services and control costs.

The third assumption was that the role of the PA is not always understood or accepted by physicians, patients, and other members of the health care community. Although the profession was established in the 1960's, many people have never received care from a PA. In addition, professional turf battles have occurred between PAs and other health care professionals.

The fourth assumption was novice PAs have a strong desire to provide effective care to their patients. This assumption was based on my years of interaction with PA students and colleagues. These individuals compete for admission into PA school and endure a rigorous professional training program. PAs who graduate are motivated individuals who are usually, but not always, goal-oriented. Lastly, novice PAs expect to apply their training in a way that contributes to the well being of patients.

Trustworthiness

The reader ultimately determines a study's trustworthiness. Scholars and practitioners within the field must verify the knowledge claims and assess the overall quality of this investigation. Above all, the work should be believable. The research process should be thorough, recursive, and faithful to the participants' voices (Whittemore et al., 2001). The four key elements establishing trustworthiness are transferability, credibility, dependability, and confirmability (Lincoln & Guba, 1985). I address each of these elements in the remainder of this chapter.

Transferability

Although external generalizability is not a qualitative research goal, thick descriptions may allow readers to draw conclusions about the relevance of the study in relation to similar contexts. Lincoln and Guba (1985) used the term "naturalistic generalization" (p. 129) to describe cases making intuitive sense to the reader based on a shared experience. Researchers may achieve this level of generalizability through thick description. Thick description is not simply a detailed description, but one that has interpretive value (Schwandt, 2007).

In addition to providing thick description, I demonstrated transferability by having the Phase 2 participants relate their experiences to the experiences of the Phase 1 participants. The Q sorts allowed me to quantify the transferability of a subset of the data collected during Phase 1. The mixed design allowed a second group of participants the opportunity to share in the study's meaning-making process. Furthermore, the combined interpretive results allow the reader to relate to both the individual and shared social perspectives of novice PAs.

Credibility

Credibility can be achieved using techniques such as persistent observation, triangulation, member checking, peer debriefing, and reflexive journaling (Erlandson et al., 1993; Lincoln & Guba, 1985). Credibility is further enhanced when investigators use purposeful sampling, verbatim transcripts, and articulated decision-making (Whittemore et al., 2001).

Persistent observation avoids seeking only superficial answers to the research questions (Lincoln & Guba, 1985). Persistent observation involves asking hard questions in an effort to reveal hidden truths (Erlandson et al., 1993). During the interviews, I watched for long pauses, verbal fillers, and body language indicating more information was lurking under the surface (Erlandson et al., 1993). I paused when encountering moments of hesitation and resistance. I listened without interruption whenever possible.

Even a single experience or opinion can be meaningful. Credibility is enhanced, however, when the single experience can be verified. Triangulation can be employed when selecting sources, methods, and theories (Lincoln & Guba, 2013). The two phases of the study exemplify triangulation in the overall study design. I triangulated my sources by using stratified purposeful sampling to capture differing perspectives and experiences from novice PAs working in various settings. I triangulated data collection methods by including interviews, observations, and Q sorts. The observational notes and post-sorting interview data was triangulated with the Phase 1 interview data and the Phase 2 Q sorts during the final interpretive stage. I also triangulated the multiple theories described in my conceptual framework.

Distortions often occur in human communication. Member checking is a frequently used technique that helps to minimize such distortions. Member checking is also the most direct means of testing research interpretations (Lincoln & Guba, 1985). I used member checking during and after the conclusion of the interviews to minimize distortion of meaning. The study participants reviewed full transcripts and relevant

portions of my Chapter IV draft. I sent those portions by e-mail during the final stage of interpretation. In Phase 2, the post-sorting interviews were be used as a member check. In both phases, the member checks assessed the credibility of my constructions from the data (Lincoln & Guba, 1985).

Peer debriefing allows the researcher to deal with emotions, test working hypotheses, and take an outside stance during the investigation (Erlandson et al., 1993). I used two fellow doctoral students for peer debriefing, allowing me to deal with the potential emotional frustration associated with the study. Both individuals understand adult education and qualitative research design. The interaction with these two individuals was informal. These two individuals were good listeners who were willing to challenge me (Schwandt, 2007).

In addition to my two fellow doctoral students, I used three scholars not serving on my committee for peer debriefing. Two of those outside scholars were PA educators who understand PA training and practice. These two PA scholars pilot tested the Q sorting procedure described in the methods section and reviewed my analysis. I recruited a third outside scholar with experience in Q methodology to serve as a peer debriefer by checking the results of my factor analysis. This scholar is a statistician, a former president of the International Society for the Scientific Study of Subjectivity, and has published studies using Q methodology in the health care education field.

Confirmability and Dependability

When the study's research steps are traceable and consistent, confirmability and dependability are established. Confirmability in naturalistic research is analogous to

reproducibility in scientific research (Lincoln & Guba, 1985). To achieve confirmability, the researcher must avoid making assertions that are not backed by discernable evidence (Schwandt, 2007). Dependability in naturalistic research is analogous to reliability in scientific research (Lincoln & Guba, 1985). Dependability is achieved when the investigator's process is "logical, traceable, and documented" (Schwandt, 2007, p. 299). Both of these conditions rely on auditing procedures, including external review.

I produced an auditable trail of raw data including field notes, tracking forms, recordings, transcripts, journal entries, emails, and other computer files. I also included work flow diagrams, concept maps, and factor arrays to demonstrate the systematic nature of my study. In addition, readers can generate their own conclusions concerning the Q portion of the study from the findings presented in Chapter IV and the supplemental documentation included in the appendices (McKeown & Thomas, 2013). My co-chairs and peer reviewers served as confirmability and dependability auditors during the process.

Ethical Considerations

I submitted an application to the Institutional Review Board (IRB) at Texas A&M University. I received an expedited review because the research participants were afforded protections to ensure the risks of the study are no greater than minimal (45 C.F.R. § 46.110). I minimized any potential damage to professional reputations, employability, insurability, and financial standing resulting from my research. Some of the participants revealed opinions about their supervisors, coworkers, and organization

that may be viewed unfavorably by others. In addition, some of the participants revealed deficits in their own knowledge and ability that they did not wish to disclose to their patients or employer.

I obtained written consent prior to conducting interviews and Q sorting. The consent form described the purpose of the study, the voluntary nature of participation, the right to withdrawal, and measures used to ensure confidentiality. I asked the study participants to assign their own unique pseudonym. The pseudonym served as the participant identifier in all transcripts, field notes, and reports. I secured all identifiable data on an encrypted computer drive and encrypted back-up drive. An approved nondisclosure agreement was signed with the transcription service. All identifiable data and research records will be retained in a locked cabinet for three years after study completion and destroyed in accordance with the institutional policies of Texas A&M University and the IRB.

I advised the Phase 1 participants that I would use de-identified portions of their transcripts in Phase 2 of the project. I informed all of the participants that some of their de-identified statements would be published in the dissertation or subsequent academic papers. The participants were informed that the only direct benefit to them was an opportunity to reflect on their learning in practice. I verbally expressed my gratitude for their participation and their contribution to the profession.

Delimitations

I only investigated the experiences of a small number of novice PAs. Therefore, the results are not intended to be generalizable. Although the participants

were purposefully sampled from different settings, the study did not evaluate the experiences of novice PAs in every conceivable subspecialty. Furthermore, the study was conducted in the state of Texas. PA practice may vary in other states because laws and customs may be more or less stringent than in Texas.

Limitations

My study was subject to limitations. The data collected about preparedness and transfer of learning was self-reported. The participants desiring to appear competent could have misrepresented their perceived level of preparedness and transfer of learning. Furthermore, the participants may have answered questions in a manner intended to protect the professional reputations of supervisors and peers.

I have described my positionality and assumptions up-front in order to reveal my biases. I minimized my potential influence on the Phase 1 participants by selecting individuals who have not been my former students. I attempted to minimize my influence on the Phase 2 participants by keeping the inquiry in Phase 2 focused on the statements from Phase 1.

The data collection methods I used, interviewing and Q sorting, have limitations. Each of these methods is time consuming and subject to interference. While most of the participants provided rich and thorough descriptions, one participant tended to answer questions briefly without elaboration.

Q sorting is not intuitive. The grid implies a normal response distribution where one may not exist. I explained to the participants that I was interested in how the items relate to each other to help them decide how to proceed when they were stalled during

the sort. None of the Phase 2 participants expressed frustration with the sorting procedure.

Access to some clinical sites was restricted, and observation of actual clinical practice was prohibited for reasons of patient privacy. Many participants preferred to be interviewed off-site, further limiting my observation of the clinical setting.

Summary

In this chapter, I have described my methodology along with my rationale for choosing a mixed interpretive approach. As stated, I believe the two approaches were complementary. The study included two groups of PAs totaling 25 individuals purposefully selected to help describe the novice transfer of learning process in different contexts. The data was collected using observation, interviews, and Q sorting.

I ensured trustworthiness by using persistent observation, triangulation, member checking, peer debriefing, and reflexive journaling. I used both inductive and abductive reasoning to interpret the data. The literature, existent theories, and the participants' concourse guided my interpretation.

This research methodology has not been used to study PAs. I believe the study added depth to what is currently known about PA transfer of learning. I hope the emergent themes, individual perspectives, and shared viewpoints from the study are of value to physician supervisors, PA educators, and future novice PAs.

CHAPTER IV

RESEARCH FINDINGS

The purpose of this sequential mixed interpretive study was to describe transfer of learning in novice PAs as they transition from formal training into clinical practice. This chapter presents the findings from 10 intensive semistructured interviews, 15 Q sorts, and observations made throughout the study. A profile of each participant is included to provide context. The key findings are organized by study phase and the research questions. The research questions were:

- What perceptions do novice PAs have about their transfer of learning during the transition to clinical practice?
- What are the factors facilitating novice PA transfer of learning?
- What are the factors inhibiting novice PA transfer of learning?
- What is the pattern of shared perspectives, if any, that novice PAs have about transfer of learning during the transition to clinical practice?

I presented the data analysis steps in Chapter III. The software I used in Phase 1 was NVivo10®, Imindmap®, and Excel®. The software I used in Phase 2 was PQMethod, PQROT, and Stata12®. I analyzed the data in multiple ways. First, I conducted a thematic analysis of the data from Phase 1. Second, I completed a by-person inverted factor analysis of the sorted statements from Phase 2. Third, I integrated my observations and reflections from both phases. When combined, these interpretive methodologies address all of the research questions. I selected supporting quotations to

represent the data fairly without emphasizing the experience of one participant over another. I also member checked my thematic interpretations by having the Phase 1 participants review the findings. I performed the Q analysis using published procedures (Watts & Stenner, 2012) and had an expert Q methodologist review my results.

During Phase 1, seven major themes emerged including: (a) direct transfer, (b) transfer failure, (c) indirect transfer, (d) individual transfer facilitators, (e) work environmental transfer facilitators, (f) individual transfer inhibitors, and (g) work environmental transfer inhibitors. There were no major differences by practice type, except prior experience was reported more often by specialty PAs, and reflective practice was reported more often by primary care PAs. During Phase 2, three factors (i.e. shared social perspectives) emerged from the analysis: (1) transfer partnership, (2) self-reliant, and (3) insecure. Practice type (primary care versus specialty) did not predict factor loading in Phase 2. Lastly, the observed variables considered evidence of PA inclusion in practice did not predict participant expressions concerning isolation or support, and were not related to perspective sharing. A complete presentation of the findings follows my description of the participants.

Participant Demographics

A total of 25 novice PAs participated in the study, 10 in Phase 1 and 15 in Phase 2. In Phase 1, 50% of the participants worked in primary care, and 50% worked in specialty practice. The Phase 1 participants worked in a variety of settings, including corporate, private, and public practices. The practice mix in Phase 1 was 50% outpatient, 40% combined (outpatient and inpatient), and 10% inpatient. The Phase 1

participants reported working an average of 48 hours per week with an average workload of 28 patients per day. The gender mix in Phase 1 was 70% female and 30% male. These novice PAs averaged 20.2 months of practice. The rate of job change by Phase 1 participants during the transition period was 40%. Table 7 summarizes the Phase 1 participant demographics.

Table 7. *Phase 1 Participant Demographics*

Phase 1 Participants

Pseudonym	Age Group	Gender	Practice Type	Practice (months)	Setting	Positions
Kathy	25-29	Female	Internal Medicine	16	Private Rural	1
Chelsea	25-29	Female	Family Medicine, Emergency Medicine	27	Private Metro. Corporate Metro.	2
Jo	40-44	Female	Internal Medicine Hospitalist	17	Corporate Metro.	1
Beth	30-34	Female	Family Medicine	24	Private Rural	1
Oswaldo	30-34	Male	Emergency Medicine	24	Corporate Metro.	2
Monica	25-29	Female	Cardiology	15	Private Suburban	1
Mandy	25-29	Female	Neurology	16	Public Metro.	1
Mary	45-49	Female	Orthopedics, Neurosurgery	24	Corporate Metro.	2
Alfredo	35-39	Male	Orthopedics	27	Corporate Metro.	2
Mike	45-49	Male	Dermatology	12	Private Rural	1

In Phase 2, 53% of the participants worked in primary care, and 47% of the participants worked in specialty practice. The Phase 2 participants worked in a variety of settings, including corporate, private, and public practices. The practice mix in Phase 2 was 67% outpatient, 20% combined, and 13% inpatient. The Phase 2 participants

reported working an average of 45 hours per week with an average workload of 18 patients per day. The gender mix in Phase 2 was 87% female and 13% male. These novices averaged 21.7 months of practice. The rate of job change by Phase 2 participants during the transition was 47%. Table 8 summarizes the Phase 2 participant demographics.

Table 8. *Phase 2 Participant Demographics*

Phase 2 Participants						
Pseudonym	**Age Group**	**Gender**	**Practice Type**	**Practice (months)**	**Setting**	**Positions**
Remmi	25-29	Female	Family Medicine, Walk-in Clinic	27	Public Metro. Corporate Suburban	2
Sherri	25-29	Female	Internal Medicine	25	Private Suburban	1
Carmen	25-29	Female	Family Medicine	26	Public Metro.	1
John	25-29	Male	Emergency Medicine, Acute Care	26	Public Metro.	2
Angela	35-39	Female	Family Medicine	15	Private Metro.	1
Dennis	30-34	Male	Family Medicine, Internal Medicine	13	Private Metro.	2
Aubrey	25-29	Female	Pediatrics	24	Private Metro. Corporate Metro.	2
Tracy	30-34	Female	Emergency Medicine	26	Public Metro.	1
Penelope	25-29	Female	Orthopedics, Neurology	26	Private Suburban& Corporate Metro.	2
Donna	30-34	Female	Neurology	22	Private Suburban	1
Alisha	25-29	Female	Dermatology	12	Private Suburban	1
Jenny	25-29	Female	Orthopedics	26	Corporate Metro.	1
Morgan	25-29	Female	Neurology	15	Private Suburban	2
Rebecca	30-34	Female	Neurosurgery, Critical Care	28	Public Metro Private Metro	2
Marie	30-34	Female	Dermatology	15	Private Suburban	1

The overall practice mix for the study was 52% primary care and 48% specialty. The combined participant sample included novice PAs working in a variety of clinical settings. The combined practice mix for the study was 60% outpatient, 28% combined,

and 12% inpatient. Overall, the study participants reported working an average of 46 hours per week with an average workload of 22 patients per day. The overall gender mix for the study was 80% female and 20% male. The combined average experience for all of the study participants was 21 months. The overall rate of job change for all participants during the transition was 44%.

Phase 1 Participant Profiles

Kathy

I interviewed Kathy at her clinic, which was a freestanding building near the town center. The clinic signs identified her supervising physician by name, but Kathy's name was not displayed. Her photo and short biography were featured on the clinic's website. Her physician was not in the clinic during the interview. Kathy had patients scheduled before and after the encounter, but did not appear rushed.

Kathy reported no prior medical experience before becoming a PA. She is the sole PA working in her physician's private rural internal medicine clinic. She has worked for the same single physician practice for 16 months. Her supervising physician sees hospital patients, nursing home patients, and works at other clinic locations. Kathy, however, only works at one outpatient location. She reported that her physician was physically present at her location 10 hours per week, thus requiring telephonic supervision for the remaining 30 hours per week. Her patient load varies, but she typically sees 20 to 30 patients per day and treats a variety of medical conditions. She supervises the clerks and medical assistants at her office, but does not work with any additional licensed RNs or NPs.

During her first month, Kathy was hired as a medical assistant at the clinic while she waited for her PA license. That waiting period allowed her to shadow the physician, become familiar with his practice, and learn how to use the electronic medical record system. She stated:

> I didn't feel comfortable making a solo decision until I had consulted with him [the supervising physician]. Um, so we did a lot of that at first—maybe for the first three [or] four months before I felt pretty confident, um, on my own. However, a lot of that transitioned to phone call consultation pretty soon because he is [in] a lot of different places at a lot of different times.

Kathy said, "The hardest part of the transition is learning how much in the practical world is different from what you are taught in school." She experienced anxious feelings resulting from isolation combined with a high level of patient care responsibility. Kathy said she adapted to practice by being self-reliant and focusing on her patients' needs.

Chelsea

Chelsea has worked in family practice and emergency medicine since graduating from PA school. In her first position, she worked for a family physician in private practice. She began moonlighting in the ER part-time and ultimately left her family practice to work in emergency medicine full time. The interview occurred off-site at Chelsea's request. She indicated her name was displayed on signage at the family practice clinic, and she had a dedicated office with business cards. In the ER, she had no business cards or designated office space.

The family practice clinic where she worked had never hired a PA previously. Chelsea said:

> At first, it was really slow, um, so he [the physician] brought me on in hopes of expanding the practice, and I guess it expanded a little bit, but not a ton. So I mean yeah, some days especially at the beginning, when it was really slow, sometimes I would just see a handful of patients a day, which was kind of boring.

During the first four months, the reduced workload allowed Chelsea to spend time reading medical journals and textbooks. Initially, she handled 20% of the patient problems on her own without assistance. After 10 months, she was confident seeing most patients without consultation.

Chelsea began moonlighting in the ER while she was still working in family practice. She described her transition this way:

> Yeah, so the ER, uh, they didn't really provide much training. They kind of dropped you in, sink or swim, and it was very stressful. I would get so nervous before every single shift. I mean, I shadowed one of the other PA's in the ER a few times before I started (pause) and then my first shift--it was just kind of like "go."

Chelsea desired more formalized training and support during her transition to practice than she received.

Jo

Jo works as a hospitalist in internal medicine. She shares a small office with other midlevel providers in a large metropolitan hospital. Her profile was featured on

the company website. The interview was conducted off-site at her request to enhance privacy. Jo had no medical experience prior to PA school. Her supervising physician works in an outpatient clinic and meets with her every afternoon to review the hospitalized patient cases.

Jo manages internal medicine problems and social issues involving hospitalized patients. She works 10 to 15 hours per day in the hospital. On a typical day, she reviews lab results and makes rounds in the morning.

Jo began working with "pretty sick" patients immediately--after a month she was working in the ICU. She said it was scary and intimidating to have so much responsibility immediately after graduating from PA school. Jo indicated her long hours and responsibilities were analogous to those of a resident physician. She initially consulted other midlevel providers working in the hospital when she needed help managing a patient. She said much of her learning occurred during afternoon case reviews with her physician. During the first two months, Jo contacted her physician "all day long." She said, "So, that's how I learned, and now I don't need him as much."

Beth

Beth works in a rural family practice clinic in a medically underserved community (an area the government identifies as having a shortage of primary care providers). The interview was conducted off-site at her request. She sees patients at a single location. Only her name was featured on the clinic's website. Beth reported having a dedicated office and business cards. In addition, she said her name was on the clinic's door.

Although Beth works directly under one physician, the clinic has four physicians and six midlevel providers. Beth shadowed her physician for six weeks while waiting for her PA license. She had a reduced workload during the first three weeks, seeing eight patients per day. Her workload increased during the transition, and she reported seeing between 30 to 50 patients per day, on average.

For six months, Beth's supervisor reviewed and signed every patient chart. She consulted with her physician in the hallway when she had questions. Occasionally, she also consulted with the nurse practitioners in the clinic for a second opinion. Beth felt overwhelmed during the first three months. She said:

> I think that being in family medicine straight out of school is probably one of the hardest things, because [in] anything else, all the specialties, they're gonna train you on site…but, in family [practice] anything can walk through the door, and you just don't have [the experience]…in three years, you can't possibly be prepared to deal with that [level of care]."

Oswaldo

Oswaldo works in a busy level three ER (a facility that stabilizes and sometimes transfers severely injured patients). The hospital listed his name on their website, but no photo or details about him were provided. I interviewed Oswaldo off-site at his request and after a 12-hour night shift. During a typical shift, he sees 15 to 35 patients. He and a single physician cover the entire ER at night.

Oswaldo was a military corpsman for eight years and had combat medical experience prior to PA school. He said "I have some experience, you know, running my

own clinic in the field, in the military, and so it was a little bit easier to transition, I guess." During his transition, he learned from three or four attending physicians in the ER who gave him as much time as he needed to review patients. He also encountered physicians who were disinterested in helping him learn. Oswaldo said, "A couple were really mainly roadblocks you know, you either step it up or move out of the way." He had to learn who would help him and who would not.

Oswaldo described his transition to practice as emotionally draining. The extreme stress lasted for "eight months to one year." Oswaldo, however, expressed gratitude for the difficult and challenging novice period because it helped him learn.

Monica

Monica works in an adult suburban interventional cardiology practice with one supervising physician. The interview took place in her clinic, located in a large medical office building. Monica had designated office space with computer access to medical records. Her name was not featured on the clinic's signage or website. There were no other licensed medical personnel working in the practice. Her supervising physician provides inpatient and outpatient care; however, Monica's practice is strictly outpatient. She sees 80% of the clinic patients.

Monica trained as a medical laboratory scientist prior to entering PA school. Although she did not practice in the lab, she indicated the lab knowledge helped her during PA school and her early practice. Monica's transition to practice included a two-week shadowing period and reduced workload. However, her clinic volume increased rapidly from 5 patients per day to 30 patients per day. Monica said "Looking back on it,

I see the advantage of an internship where you have a lot more guidance for a lot longer. Um, and that's probably something that I would have liked to have had."

Mandy

Mandy works in neurology at an academic medical center. She had a dedicated office and examination room and business cards. Her name was not displayed on the clinic's signage. Her name and photo, however, were included on the clinic's website. The interview took place in her office. The observed interaction between her and a staff member indicated a level of familiarity and mutual respect.

Although Mandy has six supervising physicians, she works with two of them most of the time. The clinic also has three other midlevel providers, including two PAs and one NP. The clinic's providers evaluate and treat a narrow range of complex neurological conditions. Each new patient sees a physician on the first visit, but the care during subsequent visits alternates between the physician and the assigned midlevel provider. Her job duties include adjusting the patients' medication regimens and managing symptoms.

Mandy described a smooth transition to practice. She trained for two months under the PA she replaced. She remarked:

> I kind of got to learn from her and the workflow, and learn the computer system, and kind of do the office visits with her there in the room with me before I was…let out on my own. So, I would say that was the most beneficial thing in my transition from school to clinical practice.

Mandy's training period lasted three months and involved shadowing, a reduced patient load, and patient case reviews with her supervising physicians. Her physicians spent time teaching her how to approach patient problems and how to read MRI images. During the interview, Mandy said, "I'm pretty much autonomous at this point."

Mary

Mary worked in an orthopedic practice for the first 15 months after graduating from PA school, dividing her time between the OR and clinic. She left that practice to work in neurosurgery, and had been in her second position for nine months at the time of the interview. I interviewed Mary in a consultation room. Because her time is mainly spent in the OR, she did not have a dedicated office. There was, however, ample shared office space for her to complete her assigned clinic duties.

Mary estimated 60% of her time is spent assisting in brain and spine surgeries. Her additional duties include performing hospital rounds, consultations, and clinic visits. She works with her surgeon four days per week. She also works with two nurse practitioners that are in the clinic on a full-time basis. There are no other PAs in her practice. When in clinic, she sees 15 patients per day. In the OR, she assists in two to five cases per day. Mary described her transition as a "super steep learning curve." She said:

> I remember going to the OR one time and sometimes the techs are a little iffy about PAs coming in there and it was like, "Oh you all think because you just have this degree you know all this stuff." Of course, they have been there

> decades. I said, "No, my degree just gives me the right to learn this stuff; it doesn't mean I know it."

Mary observed that PA school prepared her for clinic better than the OR. During school she trained in surgery for two months. She described the training as a basic "orientation" on how to "scrub" and maintain a "sterile field." Mary said, "After two years, I feel like I am probably a good PA in the clinic, and now, after almost two years, approaching competent in the OR."

Alfredo

Alfredo was a pharmaceutical sales representative before attending PA school. Since graduation, he has worked in two orthopedic surgery positions for the same corporate employer. The interview was conducted off-site at his request. He reported the three PAs in the practice share a large office with separate desks and computers. He was not featured on signs or the clinic's website.

In his first position, Alfredo was the only PA for two surgeons in a practice focused on total joint replacement surgery. He was overwhelmed by the workload and lack of support from his supervising physicians. He described his work in the following way:

> Um, in the beginning, I was all, basically, on my own. It was, you're one PA, you run the entire service as the PA, uh, with the two doctors, and they are, they're, orthopedic surgeons [and] want to be in the OR. They don't want to be in the hospital walking the floors. They don't want to be in the clinic…. Uh,

being the one person to do that [patient management] in, in the entire hospital, that was difficult at the beginning.

Alfredo changed positions within the corporation and began working with four surgeons and two other PAs on the orthopedic trauma service. Alfredo works 50 to 60 hours per week. He treats 40 to 60 patients per day in clinic. He makes hospital rounds, takes emergency call, and occasionally assists in surgery.

Alfredo described his learning during, and after, PA school as self-directed. Alfredo said he had always taken on learning challenges himself with minimal support from others. He transferred learning from PA school to clinic in the same way he transferred learning from college to PA school. He said, "You had such great big classes [during college], and you had the book and it was up to you to, to learn it, (pause) PA school same thing. You had basically everything…you needed to apply that [information] on your own." Alfredo also expressed his understanding that learning in medicine is a "life-long" process. He said, "I knew in the beginning that I'm going to keep learning…. If I wanted to be in a job that I knew every single thing about, you know, I could've, I would've done something different."

Mike

Mike works for a rural dermatology practice. The interview was conducted off-site at his request. The clinic's website contained his full professional profile. He reported having dedicated office and business cards. The practice includes two physicians and two other PAs who cover four different locations. Mike spends two days

per week treating general dermatology cases and three days per week assisting in surgery. In the clinic, he sees between 30 and 35 patients per day.

Mike had prior experience as an Air Force medic that helped prepare him for PA school, but not necessarily for dermatology practice. PA school provided him with basic information about dermatology; however, additional learning occurred on the job. Mike said:

> Just a basic description, that's all you get in dermatology class [in PA school]. This is a red erythematous patch, that's it, but they [PA instructors] don't teach you the different forms of treatment, and how you step up. When you get out in the real world, you see there is an array of medications to use, the different antibiotics and the different topical [medications].

When he transitioned into clinical practice, Mike was given six-months to integrate and simply observed the other PAs and physicians in the clinic. He reported taking notes about dermatologic conditions after patient encounters.

PA school fatigued Mike. He did not read any medical literature for the first 10 months following graduation. One physician served as his academic role model and was instrumental in helping Mike generalize the training he had received in school. Although Mike lost some general medicine knowledge and skills, he felt extremely confident working within his "practice boundaries" as a dermatology PA.

Phase 2 Participant Profiles

Remmi

Remmi worked in outpatient family medicine for 24 months following graduation. She left that position and, for three months prior to the sorting visit, she had been working in a walk-in clinic. The sorting visit took place off-site at her request. She said her sort was based solely on her experiences in the outpatient family medicine clinic. Remmi's name and photo were featured on the clinic's website and she reported having office space and business cards.

Remmi treated 22 patients per day and worked 40 to 50 hours per week. She described the clinic population as "…indigent, extremely sick, [with] poor access to care." She was only able to shadow other providers for one day during her transition to practice. However, her workload was reduced by 50% during the first three months. Remmi said, "Fear would be a good word to describe my first two years of medicine." She learned how to deal with complex patients, including those with uncontrolled diabetes, those with newly diagnosed cancer, and those inappropriately seeking narcotics. Remmi was not prepared to deliver bad news or deal with angry and demanding patients. In addition, the high clinician turnover rate resulted in an isolated working environment. The clinic was understaffed with only seven out of the requisite 15 providers providing coverage. Remmi admitted, "During the first six months, I never actually worked with the physician on my license." She relied on other PAs until a new supervising physician was assigned. Remmi indicated her sort represented her perspective and experiences during the first 24 months in practice.

Sherri

Sherri works full time for a single physician in an outpatient internal medicine practice. The sorting visit occurred at her clinic. Sherri shares office space with other staff members and appeared to have a collegial relationship with her supervising physician. Her name was on the clinic's website but not on signage.

Sherri had no healthcare experience prior to PA school. No other midlevel practitioners work in her clinic. Sherri observed her supervisor for "a few days" and was given a reduced workload—seeing "maybe four to five patients per day." After three to four months, she had enough confidence to see "10 to 12 patients per day." By the time of the interview, she was treating "12 to 14 patients per day" during a 50-hour workweek.

Sherri indicated the sort accurately depicted her perspective. She said the "stuff learned in PA school" was "solidified" when actual patients had the conditions she studied in school. She also relied on pattern recognition. Sherri said, "I know the diagnosis because I've seen a patient that looks just like this five times [before]." In addition, she reported her supervising physician was an excellent role model and teacher whose humanistic practice style appealed to her.

Carmen

Carmen works in family practice. The sorting visit with Carmen took place in her underserved community health center. The clinic's website contained her profile, but she was not featured on signage. She did not have a dedicated office because there was a shared common work area next to the clinic rooms. Carmen's two supervising

physicians and two other midlevel providers share the workload. Medical assistants staff the clinic in lieu of nurses.

Carmen shadowed the physicians for the first two weeks and was given a reduced patient load during the first month. During the transition, she continued to read when time allowed, even when she "didn't feel like it." She uses UptoDate (an online medical database and decision support tool) by searching for key words for quick access to information. She said, " I have a notebook where I write down things I know I am going to need, but may forget." She reported seeing 21 patients per day during an average 38-hour workweek. She treats acute and chronic medical conditions, including diabetes, hypertension, and heart disease. She described her practice as semiautonomous. Carmen consults with her physicians "about five or six times per week." She indicated the sort represented her perspective. She added:

> "Um, starting out as a new grad, there was a fear--did I know enough to be in practice? But, I had the support of my supervising physician. I knew he was always there. With time, I started building up my confidence level."

Carmen said she had become an expert in diabetes and chronic disease management in patients with limited resources.

John

John has had two PA positions. He worked in a fast-paced ER for the first three months following graduation. John was not able to observe the physicians when he started and felt overwhelmed by the job demands. John said, "They just expected me to do artlines [arterial catheter placement]." He said, "Even after the first shift, one of the

attending physicians told me I needed to see more patients." He described the transition from PA school to practice as "tough."

John left the ER and began working in an acute care clinic with five physicians and six other midlevel providers. The sorting visit was conducted off-site at his request to protect his identity. His name and photo were posted on the clinic's website, but without a profile. His said his name was not featured on any signage, and he did not have a dedicated office.

John works 80 hours every two weeks by rotating through 10 to 12 hour shifts. In the beginning, he was frustrated by the clinic administrator's production demands. He was expected to see a full patient load, but was only seeing 10 to 12 patients per shift. John became more productive over time and, by the time of the sort, was treating about 25 patients per shift. He said his work environment is challenging because "anything and everything can walk through the door." John indicated his sort was "pretty reflective" of his perspective. He said, "A few cards could move one way or the other, but it's as close as it's going to get." John emphasized the learning limitations caused by the excessive productivity demands placed on him and his supervising physicians.

Angela

Angela works for two physicians in a private family practice clinic. The sort took place at her clinic in her dedicated office space. She has business cards, but her name was not featured on the clinic's signage or website. Angela showed me patient case files she keeps near her desk to help her learn. She said "I had the basics from PA school, but I have to brush-up, that's why I have all of those files." She was able to

observe her supervising physicians for one month before seeing any patients on her own. She appreciates her supervisors because they are her age, collegial, and share her personal values. There are no other midlevel providers in her practice. During the first five months, her workload was reduced, sometimes to as few as two patients per day. During the following months, Angela saw an average of 12 patients per day and worked 36 hours per week. She said, "Most of my learning is self-directed, but I can also ask my doctors when needed." Angela said she feels "so lucky" because she has "amazing support." She agreed the sort represented her perspective. Angela added, "Even after 15 months, I am still learning."

Dennis

Dennis has had two positions since graduating from PA school. He initially worked for a private family medicine practice. Dennis left his first job after three months. During the first week, he was alone in clinic and his supervising physician was only available by phone. Therefore, he decided to resign and accept a position with a busy private internal medicine practice.

I visited Dennis at the clinic. He shares an office with another PA and has physical access to his supervising physician. Although he had business cards, Dennis was not featured on the clinic website or signage. The work environment appeared open and collegial. The two PAs interacted well. Their desks faced each other to enhance communication. Charts were stacked on each desk for review. Dennis introduced me to his supervising physician who complimented Dennis's work.

Dennis said the difference between his two positions "is like night and day." Although he only shadowed his second physician for two hours, his initial workload was 10 to 15 patients per day. By the time of the sorting visit, he was working 60 hours per week and seeing 20 or more patients per day. Dennis indicated the sort represented his experience in his second position, but not his first. He explained his first PA experience was short, and he was unable to engage in learning.

Aubrey

Aubrey's sort was conducted off-site at her request. One week prior to the visit she had taken a position in a pediatric ER. Aubrey stated her sort was based exclusively on her 24-month experience working with a single private practice pediatrician. She and her physician were the only clinic providers. She said she had a designated office space and business cards. Aubrey was not featured on the clinic website or signage.

Although she was allowed to observe her physician for the first two weeks, she was not afforded a reduced patient load. She treated 35 patients per day and worked up to 50 hours per week. Aubrey agreed the sort represented her perspective. She was often left alone without supervision. She said, "My physician was gone for weeks at a time. In my second month, he was gone for two weeks." Her physician's frequent absences made her anxious. Aubrey took it upon herself to learn pediatrics because her PA program emphasized adult medicine.

Tracy

Tracy works as a hospitalist in internal medicine. Just prior to the sorting visit, Tracy had switched jobs within a large metropolitan hospital. Therefore, the sort was based on her work in the ER. She was not featured on the website or signage.

Prior to PA school, Tracy worked as a paramedic and was always interested in emergency medicine. She worked in an ER with 15 core physicians. While awaiting her credentials, she observed different providers. Once credentialed, she worked 16 shifts per month, each lasting 12 hours. On average, Tracy treated 15 patients per shift.

Tracy said, "Some of the physicians are good [i.e. supportive] and others are bad [i.e. unsupportive]." She found it difficult to establish rapport with the physicians because they floated between shifts. The other PAs working in the ER were helpful to her during the transition. Reflecting on the sort, Tracy said, "I feel like you hit quite a bit of my experience. I can't think of anything else."

Penelope

After PA school, Penelope began working at a single physician private orthopedic practice. She left that practice after three months due to "ineffective communication" with her supervising physician and accepted a position as a hospitalist. The sorting visit took place in the consultation room at the hospital where she works on the neurology service. Penelope was profiled on the clinic website. Her team includes 11 attending physicians, nine residents, and one other PA.

Penelope said she shadowed the other providers during the three-month hospital credentialing process. Once credentialed, she had a reduced patient load for the first two

weeks. After two weeks, she began seeing eight patients per day during a 45-hour workweek. She said she had benefited from working in a teaching hospital where there are resident physicians and approachable attending physicians.

Penelope reported her sort accurately reflected her perspective. She stated, "The biggest reason I was supported was because of the efforts of another PA." She described herself as a "fast learner" in a "professional" and "conducive environment."

Donna

Donna works in a four-physician private suburban neurology practice. The sorting session with Donna was conducted off-site at her request. Donna's full professional profile was provided on the clinic's website. She reported having an office and business cards. One other PA with more experience than Donna also works for the practice. Donna treats inpatients and outpatients with neurological conditions. In the clinic, Donna shadowed the other providers for the first week. Describing her hospital experience, she stated:

> Over time I did a few inpatient cases, where I was doing it [the workup] by myself and then would do shadowing with the doctor. That kind of ended after about four to five months and then I was on my own.

Donna had a reduced patient load during the first four weeks. She started with five patients per day then incrementally increased by adding two patients per day each month, until she reached a maximum of 15 patients per day. By the time of the sort, she was working an average 50 to 55 hours per week. Donna indicated her sort was "fairly

representative" of her perspective. She indicated the part of her learning not covered in the sort was "time management."

Alisha

Alisha is the sole PA working for a two-physician private dermatology practice. The sorting visit took place off-site at her request. Alisha reported having business cards and shared office space with her physicians. Her name was not displayed on the clinic's website or signage. Prior to PA school, Alisha was a medical assistant in dermatology.

Alisha experienced a very formalized learning process. During the first six months, her supervisors provided her with twice-weekly personalized lessons in dermatology. She was given a syllabus with reading assignments and PowerPoint presentations her physicians retained from their residency programs. She said, "We went through Kodachrome [dermatology] images every Friday for an hour, usually over lunch." Alisha was allowed to observe patient care for three to four months before seeing patients on her own. By the time of the sort, Alisha continued to have a reduced workload of 15 patients per day. Her physicians also allowed her to learn by assisting in procedures before attempting them on her own. Alisha indicated the sort represented her perspective.

Jenny

Jenny works in an orthopedic practice with seven physicians and seven PAs. For scheduling reasons, Jenny's sorting visit was conducted at her home. According to Jenny, she shares office space with one other PA, has business cards, and her name is on a sign within the clinic. She was not listed on the clinic's website. She is assigned to

three physicians, and divides her time between surgery and clinic. Jenny works 40 hours per week. She works in the OR one day per week, has her own clinic one day per week, and works in her physician's clinic two days per week. Jenny described her transition this way:

> I didn't see any patients on my own for a full month. I was with other PAs or the surgeons…learning how to do different procedures, and how to work with the computer system, and how they saw patients. Once I got done with that initial training, they did open up my clinic, but I would see pretty standard patients, like preoperative patients or just routine things. …There would be some patients that needed an injection that I didn't feel comfortable with, so I would pull another PA in to help me or, you know, if it was something over my head, there was usually another PA or another physician in clinic.

By the time of the sort, Jenny was "comfortable" performing most tasks related to her position. She indicated the sort represented her perspective, adding, "Well, when I was going through the pile, some of them [the Q statements] I could identify with very quickly, and others it took me a while to figure out."

Morgan

Morgan works in neurology. She had just started a new job during the week of the sorting visit. Therefore, she requested an off-site meeting. She indicated the sort was based entirely on her experiences in her first position. The practice included three physicians but no other midlevel providers. She reported her name was on business

cards along with her physicians' names. Morgan also had a dedicated office. She was featured on the clinic's website but not on signage.

Morgan shadowed the physicians for two weeks before taking on a reduced workload of eight patients per day for three months. After three months, she treated 15 to 16 patients per day on her own. Morgan confirmed her sort reflected her perspective. She explained the reason for her sort in the following way:

> When you go into a practice that's established and busy, you don't have time to spend 30 minutes to just sit down with a patient and…your supervising physicians, a lot of the times, are loaded down with patients, as well, so they don't have time to sit down with you after each patient. It's good in theory, but it doesn't happen in real life. Um, so, for me, a lot of learning was done on my own, um, or through seeing a patient and, uh, taking away as many points from that [encounter so] that I could to apply that [knowledge] to a future patient….

Morgan said her supervising physicians were often occupied with patients in other clinic rooms, so she would ask the nurses in the clinic how the physicians typically manage complaints, such as headaches. By getting advice from the nurses, she was able to formulate a treatment plan without disturbing her physicians during busy clinic days.

Rebecca

The sorting visit with Rebecca took place in the hospital where she works caring for critically ill patients in the ICU. During her first year, she worked on the neurosurgery service at a different hospital, with five physicians, two other midlevel providers, and three residents. At the time of the sort, she was working in critical care

with three physicians but no other midlevel providers or residents. She switched jobs for personal reasons and not due to problems at work.

Rebecca's first PA position included "a lot of on the job training" because her PA program was focused on outpatient primary care, not inpatient specialty care. She had to learn medication administration and nursing procedures not taught in PA school. During her transition, she shadowed an NP on the service for three weeks and was assigned few patients for the first three months. She gradually increased her workload from 2 patients per day to 12 patients per day. In her current position, Rebecca cares for 15 patients per 12-hour shift and works up to 48 hours per week. Rebecca indicated the sort represented her perspective, but added, "My perspective changes every day."

Marie

Marie works for a single physician private dermatology practice. The sorting visit took place off-site at her request. There are no other midlevel providers or nurses in the clinic. She had business cards and reported her name was on the clinic's door. Marie was not featured on the clinic's website, and she reported no designated office space.

During the prior year, she had observed her physician for six hours each week on two designated days. Her hours were shortened, and she had a reduced patient workload for the first two months. Marie was frustrated by restrictions on her autonomy. She said, "Sometimes, I'm like an expensive MA [medical assistant]." In her opinion, new graduates face "a steep learning curve." She said, "It's crucial to have a supportive

supervising physician." When asked if the sort represented her perspective, she replied, "Definitely, I feel like I have talked with my friends about 85 to 90% of these items."

Phase 1 Findings

Research Question 1

What perceptions do novice PAs have about their transfer of learning during the transition to clinical practice? The novice PA participants in Phase 1 shared perceptions about their ability to transfer knowledge from PA school into practice. The broad themes relevant to Question 1 included direct transfer, transfer failure, and indirect transfer. Some of the knowledge and skills learned in PA school were immediately transferable. Direct transfer was discussed in terms of the novices' preparedness for practice. In addition, the participants shared perceptions about knowledge and skills that did not transfer. The participants perceived transfer failure as a function of inadequate initial learning and/or a decline related to the lack of practice. Lastly, the participants provided examples of their ability to transfer knowledge from PA school indirectly through generalization, adaptability and maintenance.

Direct Transfer

History and physical exam. PA training prepared the Phase 1 participants to perform H&Ps. The H&P involves patient interaction, interviewing skills, and physical examination. Some participants emphasized their "people skills," while others emphasized the H&P as a routine process learned during PA school. Mary surmised practice was about "…knowing how to talk to patients, knowing how to get a good history and physical." Likewise, Mandy said she was immediately "…comfortable to

ask them [the patients] hard questions." Alfredo gained the ability "to talk to people" and "get to the bottom of things." Oswaldo learned about "…really interviewing the patient more in depth." Mike added, "I try to fall back on my OLDCARTS [history taking acronym]: When was the onset? How would you characterize it [the symptom]?" When transferring H&P skills into practice, Monica said, "…I can turn it out. That's not a problem, and they [the PA faculty] did definitely train us well for that." The participants used the H&P to address patient complaints.

Common complaints. Half of the participants reported feeling prepared to deal with common complaints such as hypertension and diabetes. For example, Beth said, "…Managing some of the chronic conditions and um, managing you know, hypertension and diabetes and um, some acute illness, that is pretty straightforward--like strep. I mean all of those things I felt really well prepared for." Kathy echoed, "I think I was prepared really well for, for um, common complaints." Monica expressed her abilities in very specific terms. She said "Absolutely hypertension. I feel pretty confident using, um, statins and in controlling hyperlipidemia." Similarly, Jo valued PA training because it was "just learning about the basic, most common diseases, and what to look for, and how to treat them." In addition to common diseases, some participants were able to recognize emergencies.

Emergencies. Kathy mentioned, "PA school prepared me well for, you know, watching for warning signs and things like that, kind of alarm symptoms and when to know whether it needs to be out of your hands." Similarly, Oswaldo said, "I think being able to (pause) to think about more than just the obvious and things that are required,

you know, in the ER made a big difference with the training that I received in PA school." Beth directly transferred this ability by "recognizing things that are really appendicitis and what that looks like versus maybe [what it does] not…." In addition to recognizing emergencies, some of the novices felt prepared to perform procedures.

Basic procedures. Some participants directly transferred clinical skills, such as wound care and suturing, at a basic level. Mike said, "I felt comfortable [suturing], even when I was in my ER rotation." Beth's training prepared her to "suture lacerations" perform "biopsies" and treat "abscesses." Suturing continued to be directly transferable for one participant despite a lack of practice. In her second PA position, Chelsea sutured patients in the ER despite limited suturing practice in her family medicine position. She said, "I mean, I felt pretty confident…suturing, though I didn't (pause), I wasn't in the habit of doing it all the time, but I knew what to do." These examples of direct transfer can be contrasted with examples of transfer failure.

Transfer Failure

Inadequate initial learning. Nine out of 10 participants did not initially transfer specialty knowledge due to inadequate initial learning during PA school. Participants in both primary care and specialty care revealed gaps in specialized knowledge and skills. Those novices working in specialty practices felt a need to fill the knowledge and skill gaps rapidly. Monica confided, "I felt um, very alarmed coming into cardiology where I had probably, um, a month, or two months, where we specifically learned about cardiology in PA school, and that's it, and here I am, practicing cardiology." Mandy had a similar issue working in a specialized neurology practice. She said, "Initially, I had so

many questions just because, um, in PA school, neurology is not a big subset of what you learn." Likewise, Mike discovered PA school only provided him with the basic descriptive terminology he needed as a dermatology PA.

Two participants noted PA instructors did not teach some specialized procedural skills required for their job. Mary stated, "When you come out of PA school, you have already seen thousands of patients in a clinical setting. Surgery is a completely different thing." Oswaldo indicated:

> There are things that you're not going to learn, you know, in PA school, um, doing chest tubes mainly, A-lines, [and] central lines. There were procedures that are more invasive that are not something that they're going to be able to allow you to do when you're a student.

The PAs working in primary care also lacked specialty knowledge. Kathy confided, "Orthopedic complaints sometimes are tough for me." Beth called neurology her "big weakness." Chelsea added, "Neuro and derm…are two of the areas I feel like are more difficult for me."

Half of the participants mentioned they lacked knowledge when prescribing medications. In most cases, the deficit was related to medication selection or dosing. Mandy mentioned, "There's a lot of medications for things that I could use, but they weren't out when I was in PA school." Alfredo confessed, despite his experience as a pharmacy tech, he looks up "new" and "specialized medications." Beth said, at first, she had to look up "every dose" because "…even knowing what medication to give doesn't really get you anywhere necessarily." She explained the practical aspects of prescribing

"…are not taught in PA school, you have to learn that in clinical practice." Chelsea also pointed out the need to look up medications "…just to make sure [about]…starting dose or if you need to taper [the dose]."

Oswaldo added:

> They [PA instructors] didn't teach you okay, so for a renal patient you want to give this medication, you also want to give this…if you have, you know, these other complications and…so it's more of a you have to learn, you know, on the fly, on the job, and tweak it and go and read up on…what different medication is required.

Decline in performance. Although the physical examination skills and procedures learned in school transferred, some participants experienced a decline in performance due to lack of practice. Mike lost general physical examination skills because he specialized in dermatology. He intended to maintain those skills by going into family practice, but the dermatology opportunity derailed his plan. In addition, some Phase 1 participants did not practice the physical examination skills learned in PA school. Monica said, "…The whole classic murmur signs and stuff, yeah, I learned all that in PA school. Um, do we do all of them [cardiac examination steps]? Do we listen all like that? No, hardly ever." She described her physical examination skills as "terrible" due to a lack of practice. Mary's lack of physical examination practice was caused by time constraints. She said, "You focus on what you need to focus on." Jo and Monica both reported limited practice of clinical skills learned in PA school. Jo did not perform the procedures she learned because residents and nurses did those tasks at her

hospital. The participants did not believe the knowledge and skills were lost forever. For example, Monica explained:

> …If a diabetic person walked in the clinic right now, I'd probably think, oh god, I don't know how to manage diabetes anymore. But, if I really actually had to do it…I could. It may not be up to date, but I, you know, I understand the basic principles of it (pause). I'd just have to reach.

Therefore, transfer failure was sometimes attributed to the nature of practice and the type of patient problems presenting to the clinic. In contrast to transfer failure, the participants were able to extend their knowledge and skills in practice through indirect transfer of learning.

Indirect Transfer

Generalization. The novices generalized knowledge by applying it in different situations, settings, or patient populations. For some, "real-world" practice was dissimilar to school practice. According to Kathy, knowing how to apply learning from PA school to the "practical world" was the hardest part of her transition. She explained the need to learn the "nuances" of practice, such as making medication adjustments.

Novice PAs who had trained in primary care took jobs in specialty practices, such as dermatology, neurology, cardiology, and orthopedics. Mike adapted to specialized dermatological practice by reconceptualizing the basic dermatology he learned in PA school. He discovered many patients did not present in a "textbook" fashion. Mike explained:

> I have all of these classic images of how certain diseases present, but I have to think about my patients. Those are the classic pictures now, because those [mental images] are going to be the more [typical] types of presentation that I am going to see.

Despite her "good baseline knowledge of medicine," Mandy observed neurology practice was "so specific" in nature, she had to learn many details not covered in PA school. Furthermore, some participants began caring for patients with a higher acuity than they encountered as students. For example, when asked about her transition from PA school into practice, Jo responded, "I don't know if this is normal…but, uh, the patients we get here, um, are pretty sick because we get a lot of elderly or transfers from other hospitals." Despite her lack of training, Jo was required to care for ICU patients in practice. In order to generalize the knowledge and skills learned in school, the participants had to learn to adapt to the differences between school and practice.

Adaptability. Adaptability occurred when participants used their knowledge to generate different approaches. For example, Kathy learned to refine her diagnostic skills, saying, "…Maybe this test would be more appropriate to order than, you know, what was previously done." She modified her prescribing practices to facilitate patient compliance by selecting medications given "less times a day." Kathy's diagnostic approach was to "keep it simple" rather than thinking about the "10,000 things" she learned in school. By focusing on a narrow range of conditions and medications, Mandy also developed a "pretty good grasp" on the essentials of her practice. In contrast, Mike adapted by changing his initial tendency to "walk in and make a diagnosis." He learned

the importance of an inquisitive and open approach to the patient's presenting problem. He recounted several detailed patient stories to illustrate his refined diagnostic abilities, including how to handle different presentations of shingles, dermatitis, and psoriasis. In addition to adaptability, the participants shared their perceptions concerning maintenance.

Maintenance. Maintenance of transfer occurred when the participants increased their knowledge and skills over time. To assess changes in transfer, I asked the participants to describe changes in performance during the transition to practice. For example, Jo remarked:

> If somebody is crashing on the floor, my heart doesn't go a thousand miles an hour, and I know how to treat them. You know, if they're in respiratory distress…I can deal with it now. If someone's having…chest pain right there, it is not so scary. I can deal with it.

Jo went from being a participant in emergency resuscitations to leading them. Rather than handling one patient issue at a time, Jo learned to "juggle" multiple tasks concurrently. She noted her efficiency increased dramatically after the first three months. Beth described her evolution this way: "You're more fluid and you see patients with more complexity and more acuity, or you maybe see the same patients, but you don't have to go for help as often as you did when you first started." Mandy's practice also evolved. She stated, "My symptomatic management has broadened because, now that I've been working with these medications that I knew very little about, once you master one, you're comfortable using that, and you become comfortable using other

things." According to Mandy, knowledge maintenance requires "refreshing the memory [by] looking things up."

Some participants working in specialty practice were concerned about maintaining their general knowledge. As a cardiology PA, Monica explained, "I think if I were to switch to any other field, it would be just like day one of starting here…that's a big fear of mine…I'd be starting over, like from zero and I'd still be just fumbling around…." Mary said, "I think when I first got out of school, I felt like I should just keep everything fresh all the time. And you can't, there is no way." Despite this statement, Mary began volunteering once a month in a clinic for underserved patients. In addition to helping the patients, Mary expected volunteering to keep her "general skills" current. Likewise, Alfredo, an orthopedic PA, was concerned about losing primary care knowledge. He said, "I moonlight in urgent care. So, I still get a piece of it [primary care]."

Chelsea initially selected primary care to "have a good strong foundation in general medicine." She, however, also imagined knowledge maintenance would be easier in specialty practice. In primary care, Chelsea felt "responsible for knowing just everything about everything," and hoped a change to specialty practice would reduce that pressure. These examples illustrate the importance some participants placed on maintenance.

Research Question 2

What are the factors facilitating novice PA transfer of learning? The factors facilitating transfer were related to the individual and the work environment. The

individual facilitating factors included confidence, motivation, self-study, prior experience, and reflective practices. Whereas, the work environmental factors included observational learning, reduced initial work demands, physician support, peer support, nurse support, learning resources, and formalized learning opportunities.

Individual Transfer Facilitators

Confidence. The majority of the participants developed confidence as a result of their experiences with patients. Jo explained it this way:

> I think all it was, was practice and confidence, like you just knew that if this person came in with heart failure, this is what you did; this is what you looked for. Um, if someone came in for possible, uh, MI [heart attack], you'd know what to look for; you'd know how to treat. And so after you see one or two, you know, you know what to look for and you know how people respond.

Confidence allowed some participants to take on challenges by generalizing the knowledge and skills acquired in school to new and more complex situations.

> I don't think I know 80% of what I need to know. I think I'm confident in the fact that…I can attack each and every problem, uh, confidently and, and know where I can find an answer. (Alfredo)

Confidence was obtained incrementally. For Kathy, the process began in PA school.

> The more you do it, the more comfortable and familiar you are with things to look for and, um, you know processes as far as diagnostics and all that—treatment plans as well. And, I think that, you know, just over time, and in school even, I got fairly confident with that before I even transitioned to practice.

For Mandy, confidence grew over six months, allowing her to say she was "very confident" when providing care. Half of the participants mentioned their confidence had grown, making them feel "comfortable" when applying their knowledge and skills in the clinic.

Motivation. The participants provided examples of performance-oriented and goal-oriented motivation when applying and extending their knowledge. Beth, Jo, and Mary expressed a performance orientation exemplified by a desire to produce good patient outcomes and avoid patient harms. For example, Beth stated:

> I am motivated by, um, changing people's lives in a way that's doable for them. I really, really focus on, um, making things affordable and making sure that, um, my patients feel comfortable with what we've decided. …I really want people to be successful. I think that's what drives me.

Likewise, Mary shared a motivational prayer she uses while driving to work: "Help me be good to my doctors and help me be good to my patients." Jo shared this general attitude, saying she is motivated by a desire "to help people."

Chelsea, Mandy, Kathy, and Mike expressed a goal-orientation exemplified by an internal desire to be the best. Contemplating a change to specialty practice, Chelsea speculated, "I feel like I would like to really know the ins and outs of something." Mandy chose specialty practice for the same reason--to become an expert. She explained, "Yeah, so I like being in a specialty, in that, I feel like you can become somewhat of an authority, um, you know something really well…." She also expressed a desire "to be the best at everything I do."

Kathy and Mike both felt their goal-orientation was a trait they carried since childhood. Kathy remarked:

> I think certainly I'm pretty goal oriented. Um, I have been…since I can remember. So, I think, you know, in-in high school and then in college, it's just like the next step. What are you looking for? You're always going towards something.

Mike concluded he "was driven to succeed" because he was raised by his aunt and uncle. Mike confided, "I was always going for their approval, (pause) and so, it was always going above and beyond." He stressed his goal is "to be the PA who can be depended on."

Alfredo expressed both performance-oriented and goal-oriented motivation. He wished to avoid bad patient outcomes. He said, "I think it was a fear factor, you know, I think it was more of, okay, I graduated from PA school. Great. Okay, now I actually have to do everything for these patients." Yet, he also revealed a desire for skill mastery by saying, "I want to be as good a PA as I can…." Both forms of motivation prompted the participants to seek ways to transfer knowledge and skills. One way they mentioned was self-study.

Self-study. Half of the participants engaged in self-study to facilitate transfer of learning. Alfredo explained the process he used to transfer knowledge to clinic was similar to the process he used to transfer undergraduate knowledge to PA school. He became accustomed to learning on his own. Alfredo said:

> You know, having that…thirst for it [knowledge]…and hunger for learning on your own, and…having the experience of doing so, you know, with PA school, there's just so much information, you can't get everything from the professor. You have to do it all on your own or, well, the majority of it on your own at home. And, so that was just an easy transition.

The participants initiated self-study after recognizing deficiencies in their practice. Kathy reported stagnation. She declared, "I've kind of come to the realization that learning is…kind of what you make it…. You have to do it on your own." Likewise, Mary realized she had to do more reading, "because you gotta do both [study and apply]…you can't just do the practical." Although initially fatigued from studying in PA school, Mike affirmed the importance of self-study during the transition to practice. Mike stated, "…Now I am reading more [and] my confidence has increased." He explained the medical literature "makes more sense" because he can "recall certain patients" while reading. The value of self-study was enhanced when combined with practice. In addition to self-study, reflective practices enhanced transfer of learning.

Reflective practices. Eight out of ten participants described reflective learning practices. Over half of the participants mentioned forming illness scripts. Mike learned dermatology by "repetition," "recognition," and "recall." He concluded, "So you kind of build your own little rolodex in your mind of what you have seen, and the history, and you begin to formulate your differential diagnosis and what disease it could be."

Alfredo shared a similar mental practice saying, "I think my differentials are pretty good…that alarm clock's going off in my head. I need to focus on that or, you know, I need to call my doc…."

Beth described her reflective practices this way:

> I can sit there and think about what else do I need…what am I missing? What else do I need to be doing you know? …You experience times when you got it [the diagnosis or treatment] right, or didn't get it right, and that definitely affects [how] you approach patients in the future.

Chelsea reflected on how other providers treated patients by reviewing their documentation to form a mental practice pattern. Chelsea explained:

> I'll see what the chief complaints are and, um, [what] the other physicians are seeing and I'll just click on and see like what they order as far as tests and medicines, just to see…for that kind of chief complaint, what do you order?

In addition, Chelsea learned by reflecting on her practice decisions. She found the more decisions she made, the more she learned. Jo described reflective learning this way: "…After you see one or two [patients with the same problem], you know, you know what to look for and you know how people respond. So it's, (pause) I think it's all practice."

For some participants, seeing difficult or unusual patient examples enhanced reflective practice. Mary valued hospitalized patients, "because you see a lot more stuff than you would just in the clinic." Likewise, Oswaldo appreciated working in a "hard environment" because it was a "trigger" that promoted learning. Mike saw a patient

with a rare condition called "mycosis fungoides." He explained, "There are those cases that you do not see as much, but you remember, (pause) I still remember what she looks like, how the disease presented." In addition to reflective practices, prior experience facilitated transfer of learning.

Prior experience. Half of the participants had prior medical experience before becoming PAs and four individuals found it beneficial to transfer. Mike and Oswaldo had gained medical knowledge and skills by working as medics in the military. Monica and Kathy had experience as technicians. In addition, Alfredo had been a pharmaceutical sales representative for seven years.

Mike's prior experience enhanced his ability to communicate with patients, thus allowing him to apply those skills easily during and after PA school. Oswaldo's background seeing acutely ill and injured soldiers prepared him for ER work. He transferred procedural learning from the military into practice, including skills such as "suturing, intubating, you know, all those things."

Monica was a clinical microbiologist. Her experience gave her an advantage when transferring laboratory test interpretation skills into practice. She stated:

> We didn't learn just about lab stuff; we learned about diseases and so I came into it [practice] already knowing a lot of immunohematology. I know a lot of the autoimmune diseases, and (pause) I knew every classification of leukemia ever and how to diagnose it. It's incredible. And, I didn't learn any of that in PA school.

Alfredo's prior experience as a sales representative helped him communicate with physicians and nurses. He benefited from knowing "what makes doctors tick" and "what makes them tick in the wrong way." His familiarity with physicians lessened the intimidation expressed by some novice PAs in transition. In addition to individual facilitating factors, the participants discussed environmental factors helping them apply their learning during the transition to practice.

Work Environmental Transfer Facilitators

Observational learning. Most participants used the term "shadowing" to describe observational learning. Passive observation allowed the novices to learn how to apply knowledge and skills in ways specific to their practice specialty and setting. For instance, Mary remembered, "I would shadow my doctors and watch how they would examine [patients]. And, I have had doctors that do very good physical exams." She explained observing the physicians taught her the proper way to perform "provocation testing" during a physical exam. The length and source of observational learning varied between participants. Although three participants shadowed for less than a month, the majority spent at least a month observing. Table 9 lists the different duration and sources of observational learning reported by the Phase 1 participants.

Table 9. *Observational Learning Reported by Phase 1 Participants*

Participant	Duration	Person(s) Shadowed
Jo	None	None
Alfredo	1 Day	Supervising Physician
Monica	2 weeks	Supervising Physician
Kathy	1 month	Supervising Physician
Beth	6 weeks	Supervising Physician
Chelsea	1-2 months	Supervising Physician
Mandy	3 months	Supervising Physicians and PA
Mary	3 months	Supervising Physicians and NP
Oswaldo	6 months	Supervising Physicians
Mike	6 months	Supervising Physicians and PAs

Some participants shadowed the physician or other clinicians while they were waiting on licensing or hospital credentialing. For example, Mary said, "…In surgery, there is a period of time getting all your credentials in, so the first number of months were more observation just because I couldn't scrub in." Beth recalled, "When I first started and I didn't have my license yet, so I just shadowed the doctor and he talked to me about, um, kind of how he approached patients and why he was doing what he was doing…." For some participants, the observational learning was followed by provisional practice and fading. For example, Mandy said:

> So, I would say the first two weeks were shadowing and she [the PA Mandy was replacing] was teaching me the neuro exam, how they do it here, um, symptomatic management. She was teaching along with shadowing in clinic. And then…two weeks after that, um, I was doing the exam portion of the visit and she was doing the patient interview. And then, it got to the point where I was kind of doing the whole thing and she was just sitting in the room with me in case I had questions.

Following that initial experience, Mandy continued to observe her physicians "just to see variations and how they do things."

Longer periods of observational learning occurred in conjunction with more formalized workplace training. For example, Mike remembered, "…[During] my first six months of practice, I was always with somebody. I was never by myself, and I always entered the room with the other clinicians." Mike's employer scheduled activities and assigned learning objectives during his observational learning period. Additionally, more than half of the participants reported a reduced workload following the shadowing activities.

Reduced initial workload. The amount and duration of reduced workload varied by participant. For example, Monica was allowed to see only "four or five patients a day" for two weeks but rapidly increased to "30 per day." Monica said, "I didn't have a choice, we were busy." In contrast, Mandy had a "bare bones" schedule for three months as she waited for the clinic to change her appointment template in the computer system. The participants' reduced workload facilitated mental processing. For Chelsea,

the reduced load provided additional time with patients and time for self-study between patients. Beth explained the benefits this way:

> I think being able to have time to really process each patient made a lot of difference. If I had been packed in with 25 patients at the beginning, I think it would've taken me longer, whereas I can really be, you know, cognitive in my approach to every person.

In addition to a reduced workload, the participants mentioned other environmental facilitators, such as physician support.

Physician support. Supervising physicians supported transfer of learning by exhibiting positive personal characteristics and through active involvement. Facilitating physicians were perceived as knowledgeable, likable, approachable, and willing to teach. Describing his physician, Mike declared, "…He has got to be one of the most intelligent men I have ever met." Chelsea worked with both supportive and unsupportive physicians. Chelsea said, "Within the ER, there are definitely doctors that I love working with, they're always really helpful, super nice, they've taught me a lot. I feel really comfortable talking with them." She observed some physicians were "more excited and enthusiastic about teaching" than others. In a different ER, Oswaldo encountered "three or four" physicians who made time for him, adding "Any time I had a question or I wanted to bounce a patient off of them, or an idea, or whatever, you know, I mean they were there to, (pause) to answer my questions and guide me." Monica also appreciated her physician for his patience. She explained her physician takes "the time to sit down with me, and teach me [and does] not get irritated when I

need to be told something more than once." Monica's physician embraced the teaching role. She said, "He reassured me he is a very good teacher and so that was very paramount [in deciding to join the practice]."

Supportive physicians were actively involved. Mary's physician selected articles for her to read, avoiding items described as "too technical." The physician also showed Mary how to find brain "aneurisms" on "angiograms." Beth's physician guided her through procedures and reviewed patient cases with her. Beth explained:

> He might see something really interesting that he thinks I probably haven't seen before.… If, I'm not busy or pass him in the hallways, [he says] "okay, come look at this real quick." And, he'll show it to me and tell me about it and then I'll go on with my business, and he'll keep doing what he's doing.

Mike described his physician's supportive teaching activities:

> We talked about it first. I even brought Netter's [anatomy book], and we talked about it. We looked at pictures. Then, um, he turned over the reins and kind of guided me…it just felt easy. I felt like I knew what I was doing.

Mandy's physicians provided her articles to read and taught her about neurology. She recalled:

> I would sit in the [patient] rooms with them and then they would go through [the visit]; after, we would leave the room, go to the consult room, and they'd go through how they approach symptomatic management depending on the patient's issues, whether it's memory or bladder, bowel pain, and just how they address those things and focus on them.

Mandy's physicians also taught her how to read MRIs in a systematic way.

Jo described her physician this way:

> My doctor, he teaches. So, when you go for questions, he gives you the pathophysiology and [asks] "why not just do this drug?" And so…if I ever have a question, I go sit with him, and…he gives me a biochemistry lesson.

Oswaldo appreciated physicians who provided feedback on his performance, even when it was criticism. He remarked, "I thank some of those docs…for being tough on me because now, I mean, I feel like I can work in pretty much any ER, you know, and function pretty well." Beth's physician instructed her to work through his inbox containing lab results. She worked her way through each one and then received feedback. Beth remembered, "It was a lot of work on his part doing double duty, but it made it where I was more competent, and I got immediate feedback on what I was doing." Mike's surgeon formalized feedback by calling "two to three times per week." During the calls, Mike's physician asked him: "What were you thinking in general? How did the patient present? What did they say? What did you find most fascinating today?" Mike enjoyed the process and appreciated the feedback.

Peer support. Although the participants cited the supervising physician as the key person facilitating transfer, the majority also found peer midlevel providers helpful, especially for second opinions. Alfredo declared, "I'm ecstatic at the support that I have, not only from my physicians, but from my PA, uh, colleagues." In some cases, peers provided backup only when the physician was unavailable. For instance, when her doctor was out, Beth confided, "I usually would ask the other nurse practitioners that

were closer to me. You know, hey look at this x-ray I just need a second opinion, or this is what I'm thinking. Does it sound okay?" Likewise, Alfredo asked other PAs questions, but added, "…If there's something that I really need to know more information about, and if you're still learning about something, right from the first, you know, from the very beginning, you know, I'll go straight to the doc." In contrast, Mike admitted he routinely went to the other PAs for help, explaining, "…My doc is very difficult to get a hold of." His physician instructed Mike to seek help from his peers first.

Nurse support. Jo and Oswaldo found nurses in the hospital to be very supportive during their transition. Oswaldo said, "I always learn from my nurses…especially, you know, the good nurses; the nurses that have been there for a while and stuff like that. Many nurses…are well trained." Likewise, Jo relied heavily on nurses to help her make decisions in the ICU. The nurses facilitated Jo's transfer of learning by prompting her. Jo recalled:

> I definitely learn, (pause) when I first started my main focus was the nurses. (laughs) Like what to do…I still, before I round in the morning, …I'll talk to the nurses and see what's going on because they see them [the patients] all day long. And so I always talk to them [the nurses]. And they'll be like, you know, I think maybe this or that, and then I'll go look at the labs, or I'll go look at their history, and usually the nurses are right.

Oswaldo explained nurses guided his decision making:

> They [the nurses] know a lot of the dosages that are commonly used for codes [resuscitation] and this and that, and so, if we make a mistake, they always kind of, you know, trigger your mind: "Okay…we're going to give this," and they give you the number [dose] and that…helps out a lot.

The participants relied on physicians, peers, and nurses for support; however, they also used available learning resources during the transition to practice.

Learning resources. The majority of the participants reported using resources, such as books and electronic databases containing medical information. The most frequently mentioned resource was UptoDate. Their employer often provided subscriptions to such resources. Alfredo reported using "Google, MDConsult, UptoDate," and "a couple of [phone] apps." Mike relied on dermatology textbooks and a website produced by "The American Academy of Dermatology."

For some participants, learning resources stimulated transfer by enhancing recall. Monica said, "I love Medscape, um, I can just pull up…the overview of something, and read it and, oh yeah, no, I knew that." The participants frequently mentioned the value of learning resources when deciding on therapeutic interventions and for dosing medications. Kathy described her resource use this way:

> Um, as far as pharmacology…I have an app on my phone that helps with that. Um, some of the different, you know, pharmacokinetics of things and interactions…I'm still piecing together when it comes to some drugs. And so, there's always a resource there to look it up immediately. And of course, uh, if

> you need deeper information, there's journal articles and all kinds of things that you can look into.

Mandy echoed:

> I'm on UptoDate all the time, I feel like. And not necessarily, um, things that I don't know but just kind of refreshing my memory of what's the dosing on this, or what's the appropriate management of…this or that?

Several participants used published materials as ad-hoc practice protocols. Mary said, "He [the physician] bought me a very useful, super useful, text that was my bible for what to do, especially if he wasn't in the clinic."

Oswaldo approached it this way:

> …I want to [know] what should I do, you know, specifically for this type of situation, and I go pull up my Tintinalli's [emergency medicine manual], and I look real quick. "Okay they recommend to do a CT to rule out vascular injuries or whatnot;" yeah, I already got that. So, what else…?"

The participants verified and/or expanded their prior knowledge with learning resources. In some cases, they also received formalized training.

Formalized training opportunities. Formalized learning activities, including additional electives, employer training, and CME programs, helped participants apply knowledge in practice. While still in PA school, a few participants enhanced transfer by taking additional elective rotations specific to their intended specialty. For example, Beth completed elective rotations in radiology and orthopedics to enhance her ability to read imaging studies, such as x-rays. Beth concluded, "If I didn't have those two

rotations, I don't know what I would've done." During PA school, Mike completed a dermatology rotation in the clinical practice where he later took a job. Oswaldo tailored his elective rotations to obtain "a good five months of emergency room" experience during PA school. He found the extra training immediately transferred to his job in emergency medicine.

Some employers provided formalized learning opportunities. For example, Alfredo attended resident physician training sessions at his "teaching hospital." His team meets once a month "to review certain things." Alfredo said, "Literally, we'll just take a patient [case] and go through it." Similarly, Jo benefited by working in a "teaching hospital" by interacting with resident physicians. Monica's employer sent her to local cardiology training opportunities, including weekend seminars and instructional programs provided by different medical device companies.

Six participants reported attending CME conferences. Although Jo did not find conference attendance helpful, the remaining five participants felt CME conferences facilitated knowledge retrieval and application. The Texas Academy of Physician Assistants (TAPA) conducts biannual CME conferences. Four participants mentioned TAPA by name. Beth attended TAPA to "pick up a new tidbit" of information. Mary attended TAPA to "brush up on stuff." Mary alternated between PA conferences for general knowledge and specialty conferences "specific to neurosurgery." Oswaldo selected CME conferences specific to emergency medicine. He stated, "They're very helpful and they kind of speed up your process…they show you cases and common mistakes and don't forget about this, you know…I mean, it's just a really good learning

experience." Formalized training allowed participants to maintain and reconstruct existing knowledge during the transition. In addition to factors facilitating transfer, the participants identified factors inhibiting transfer.

Research Question 3

What are the factors inhibiting novice PA transfer of learning? Individual and environmental factors inhibited transfer. Although deficient specialized knowledge was an individual transfer inhibitor, it was previously discussed in response to Question 1. The additional individual inhibiting factors included negative emotions, diminished motivation, and confidence problems. The environmental inhibiting factors included isolation, complex patients, and time constraints.

Individual Transfer Inhibitors

Negative Emotions. The participants revealed negative emotions including anxiety about harming patients, vulnerability, and an overwhelming sense of personal responsibility. These emotions impaired direct transfer by causing hesitation and self-doubt. Alfredo cared for hospitalized patients without much assistance from his physicians. Normally, Alfredo was "never stressed about anything," but he realized the "patients' lives" were on the line. Stress prompted Alfredo to seek a different PA position.

Beth also felt overwhelmed during the transition to practice. She confided, "I think of the first three months, I (pause), I cried every day." According to Beth, the transition to practice is "daunting" even when novices think they know what is ahead. She described the emotion "…like, I don't even know what I'm doing and why did I

choose this job and why am I failing medicine? I'm not ready for this." Similarly, Monica was overwhelmed by the autonomy and responsibility for patients. She explained:

> I had probably been here almost two months, (pause) I was very hesitant just because I feel like cardiology is so important. I felt like I'm going to kill somebody. That's how I felt like, like someone's going to die.

The stress caused Monica to have "fear dreams" and cry at work. When asked how she managed the stress, Monica responded:

> I'm not sure I manage it very well, because I do still, uh, I'm a stress type person, so I do still have my moments where I have to close my office door and cry. But it doesn't happen nearly as much. Like, uh, instead of happening like every, every couple days, it's like, uh, every two months. So, you know that's progress.

Similarly, Mandy's worry interfered with her work for the first eight months, especially when she was "on call." Mandy adapted to the stress. She stated, "Um, now I can walk out the door and not think twice about work." Chelsea dreaded going to work in the ER and experienced physical anxiety. She said, "I seriously was like nervous, sick to my stomach, before every single shift." She found the anxiety diminished over time. Chelsea reported, "I don't feel like that any more, I can eat before I go to work."

Despite his military experience and preparation, Oswaldo experienced the transition to practice as "emotionally draining." He remembered thinking, "Holy crap, why am I doing this?" You know, I mean it was really, (pause) it was really tough going

in the ER like that, especially a level three ER." It took "eight months, up to a year" for him to adapt to the stress.

Jo recalled, "shaking" during the first month of practice. She concluded fear is normal and something novices overcome. She explained, "It's stressful because these people are dying and, um, but you do everything you can do." In addition to negative emotions, three participants cited examples of diminished motivation.

Diminished motivation. PA training is rigorous, and novice PAs can experience study fatigue. Beth described diminished motivation this way:

> I also think that people don't feel like studying anymore once they graduate and so knowing that you still have to study and that you have to study more than ever. That first, you know, six months to a year is challenging for people because they're just so tired of studying.

Two other participants experienced study fatigue. Mike remembered, "…fatigue was the greatest barrier, um after graduating PA school." He wanted a break after enduring the rigors of PA school. Mike explained:

> Once you've finished PA school and graduate, the last thing you want to do is pick up a book. You know, you've had it throttled down for three years, (pause) you have pulled all-nighters. I used to spend eight and a half to nine hours studying. The last thing I want to do is read.

Chelsea echoed the desire for a break. She confided, "I try to read and study on my days off, but it's hard because it's my day off, and I don't really want to [study]." Diminished

motivation reportedly lasted for months; however, these participants managed to eventually overcome study fatigue.

Confidence problems. According to some participants excessive or inadequate confidence inhibits transfer of learning. For example, Alfredo worked with other novice PAs who were, in his opinion, overconfident. He complained, "Um, so some PAs think they know everything right out of school, and I've seen it, and it's, I think it's dangerous…they think they know it [medicine] so they don't need to learn more, or read more, you know?" In contrast, Oswaldo worked with other novice PAs who lacked confidence. Oswaldo cited this example:

> There's a practitioner, mid level practitioner, that works with me and he's been working in the ER for three to four years already. And, he doesn't feel comfortable picking up complicated patients like an abdominal pain, which is not really complicated…. He'll avoid those things [and] like pick…the easy stuff.

Oswaldo expressed his frustration further. He said, "I don't understand, you have the training, you have the medical knowledge; make the decision and stick with it."

Mandy lacked confidence initially but experienced improvement over time. She remembered it this way:

> The first three months of being on my own in clinic was probably, um, not shaky, but I definitely questioned myself a lot of the time or I was, (pause) I had a lot of situations that I wasn't 100% sure what I wanted to do. Um, and so I would have to do a lot of prep going into the visit.

After six months in practice, Mandy's confidence had increased. She related the boost in confidence to the "repertoire" of responses she developed in uncertain situations. Chelsea lacked confidence when asking questions. She admitted, "Sometimes I kind of feel silly asking because I feel like it's something I should know by this point…I mean there's always a level of vulnerability when you ask a question." Chelsea worked to overcome vulnerability due to her "need to learn." In contrast to individual transfer inhibitors, other inhibiting factors were environmental.

Work Environmental Transfer Inhibitors

Isolation. Half of the participants experienced isolation during the transition to practice. Isolation occurred when the novice PAs were expected to work autonomously without much supervision or feedback. Describing her transition to the ER, Chelsea said, "They kind of dropped you in sink or swim, and it was very stressful." Alfredo had a similar experience. He recalled, "Um, in the beginning, I was all, basically, on my own. It was, you're one PA, you run the entire service…being the one person to do that in, in the entire hospital, that was difficult at the beginning." As a result, Alfredo changed jobs in search of more support. Jo was also expected to work without much support. She said, "We're pretty much on our own in the hospital…we have a lot of exposure. So, you learn a lot quick, and you're expected not to consult. You're expected to do it [care for the hospitalized patients]." Kathy worked in a rural practice without support. Her physician was only present in her clinic for 10 hours each week. She learned to be self-reliant. Kathy recalled:

> There were times I thought I'm not getting enough supervision or, um, I'm not, (pause) I don't know what I'm doing here yet. Um, but…getting through it has made me a believer in the fact that you just have to own it in some sense and be responsible for your own decisions. And, if you don't have the answer to something you need to find out instead of just, you know, always having somebody else that you can ask right there.

Some participants reported difficult encounters with their physician supervisors. Chelsea described her encounters with an ER physician this way: "He just always has this, uh, glare on his face and I feel like the way he talks to me, it makes me feel like he thinks I'm just a complete idiot." Oswaldo encountered two physicians "that were really mainly road blocks…[with the attitude] you either step it up or move out of the way." He recalled working with the two physicians was "very stressful." In addition, inadequate supervisory feedback inhibited transfer. Kathy "struggled" with the lack of feedback. She described her physician this way:

> He's not a very warm person. Um, and so he's not very affirming or, um, he's not going to be the one to tell me you did a great job here or, um, he's also not going to be one to criticize much. He just doesn't…give me a lot of constructive criticism.

Kathy's isolation was worsened by the lack of peers. She stated, "…You just feel lost because there's no other midlevels to ask." In addition to isolation, the participants identified complex patients as another transfer inhibitor.

Complex patients. When patient presentations differed from training, transfer of learning was described as more challenging. Beth explained, "You may see something in rotation, but you don't have enough time in rotations to see all the things that you can come in contact with [in practice]. So it's a steep learning curve." In contrast to PA school where students often focus on single disease entities, Oswaldo encountered patients with a "multitude of problems." In addition, patient complaints were sometimes vague and difficult to evaluate.

Kathy provided this example:

> Just kind of your vague, I don't feel good, um, patients are tough because there are so many systems that can be involved…. You don't know whether it's some sort of anemia, vitamin deficiency, cardiovascular issue, you know, pulmonary or…any of the systems really. You go where do I start? Because in the real world you can't do the shotgun approach where you run $50,000 worth of testing on them to find the answer.

Mandy experienced the complexity of patients with multiple sclerosis (MS), a disease that "affects so many other body systems." Complex patients also perplexed Monica. She explained:

> Um, like we, we have a few patients who you just can't seem to figure out what is wrong with them. Like, what's wrong with you? Something's wrong with you. It's frustrating to have patients come in and not be able to say; I think this is what's wrong.

Patient complexity interacted with other factors and influenced Chelsea's practice behavior. She explained: "I feel like I try to pick up more complex patients when I'm with a physician that I like because…I don't want to pick up a…chest pain [patient] with a doctor that's so mean." Furthermore, challenging patients required more time than routine patients. However, busy clinic schedules resulted in time constraints, an additional transfer inhibitor.

Time constraints. Increased workloads inhibited transfer of learning for some participants. Although Chelsea benefited from extra time in her family practice job, she was rushed when working in the ER. Chelsea complained, "…the time is rushed to like see patients quickly and get them out quickly, but you're also not supposed to make any mistakes and you don't know the patient."

Kathy's busy schedule limited self-study and her ability to practice physical exam skills. In addition, her physician's busy schedule impeded consultation and learning. Mandy agreed, "We're so busy that I don't have a lot of time to just sit down and look at the MRIs specifically." She also identified time as a factor limiting her physicians' teaching activities. She explained "how many patients they're seeing that day and how on time they are all play a huge role into how much actual teaching occurred."

I asked Mary if her surgeon discussed cases between surgeries. Mary replied, "We usually don't have the time because of the nature of the job. I am still in the OR, and they're gone." Mary revealed the busy nature of the practice, saying, "…A lot of times days can go by where we don't know where the other person is; we're just texting

each other around the hospital." These four participants perceived time constraints as an important obstacle to transfer of learning.

Graphical Presentation of Phase 1 Findings

The seven main themes from Phase 1 include layered subthemes corresponding to the nodal structure generated using NVivo. Figure 9 contains the final concept map and illustrates the thematic structure. In addition to the themes already presented, the figure contains contextual themes related to consultation and supervision. These contextual themes are presented as supplemental findings later in this chapter. Figure 10 compares the number of coded sources by practice type for the themes related to Question 1. Figure 11 compares the number of coded sources by practice type for the subthemes related to Question 2. Lastly, Figure 12 compares the number of coded sources by practice type for subthemes related to Question 3.

Figure 9. *Concept Map of the Study's Thematic Structure*

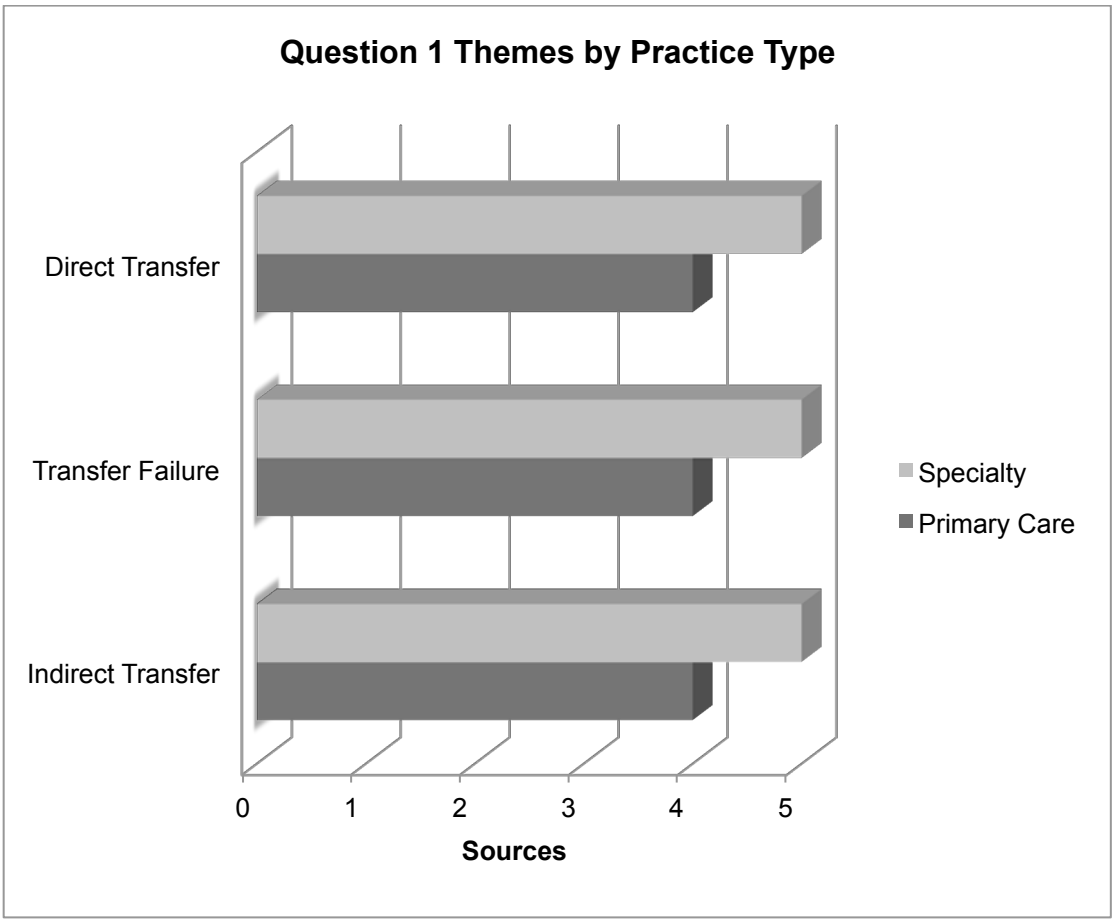


Figure 10. *Coding Source Comparison of Themes for Question 1*

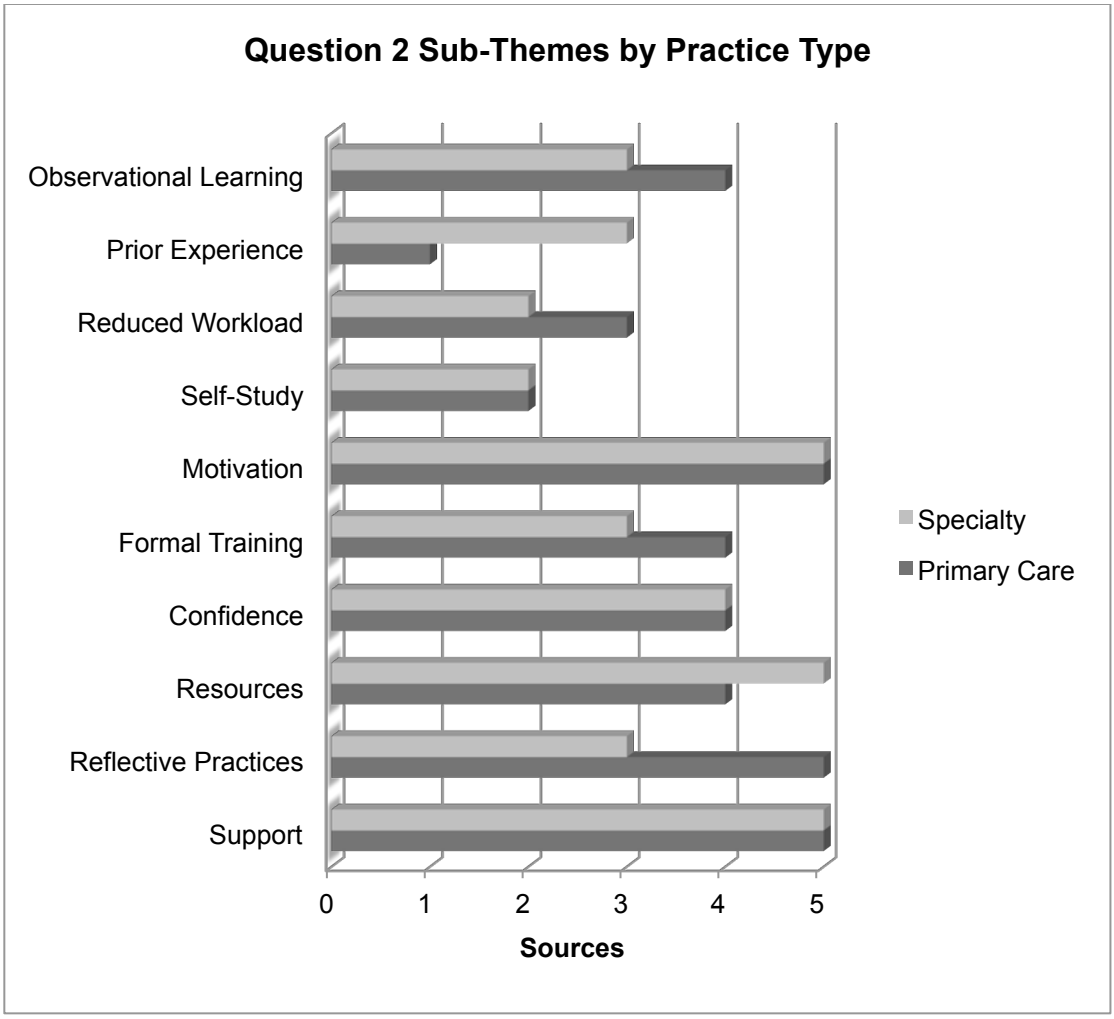


Figure 11. *Coding Source Comparison of Themes for Question 2*

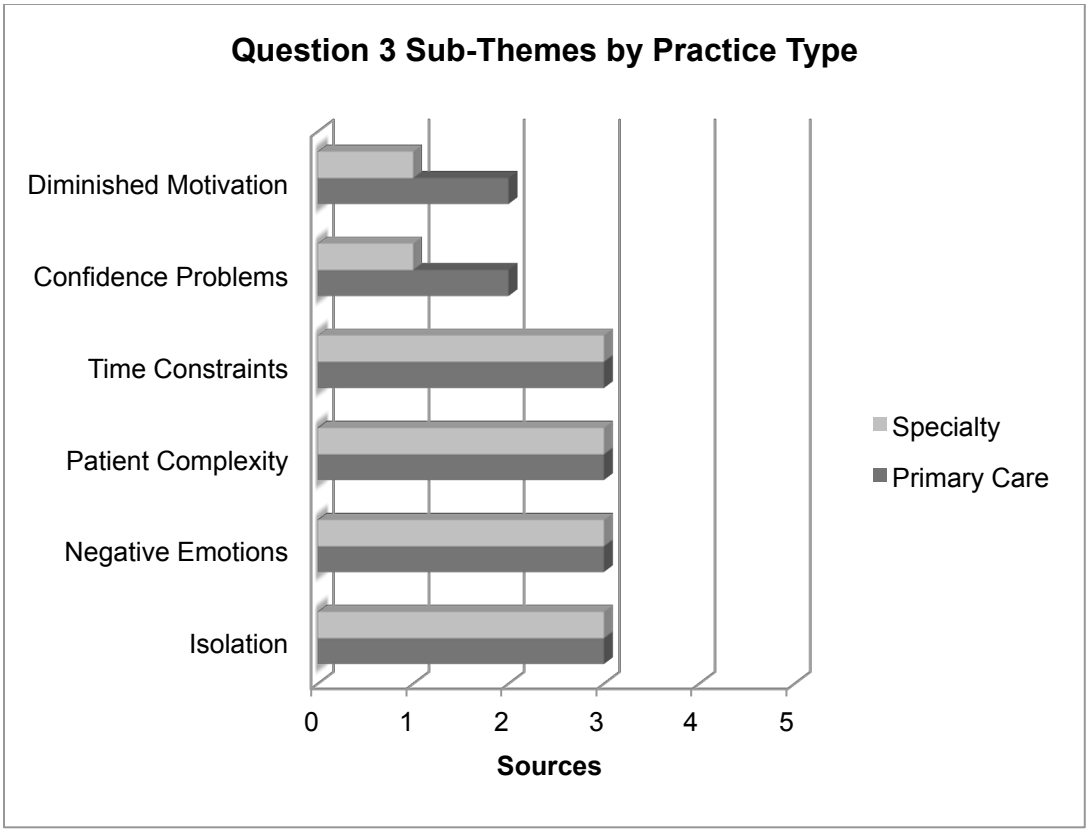


Figure 12. *Coding Source Comparison of Themes for Question 3*

Phase 2 Findings

Research Question 4

What is the pattern of shared perspectives, if any, that novice PAs have about transfer of learning during the transition to clinical practice? I identified three factors (i.e. shared social perspectives) using Q methodology. I labeled the first factor transfer partnership. Novice PAs sharing the transfer partnership perspective experienced few, if any, individual or environmental obstacles to transfer of learning. I named the second factor self-reliant. Novice PAs sharing the self-reliant perspective experienced environmental obstacles, but few, if any, individual obstacles, to transfer of learning. I

designated the third factor as insecure. Novice PAs who shared the insecure perspective experienced both individual and environmental obstacles to transfer of learning. There was no clear relationship between practice choice and perspective sharing because every factor included individuals working in primary care and specialty. Table 10 shows the Phase 2 participants' factor loadings; an X symbol identifies the defining sorts for each factor.

Table 10. *Factor Matrix and Defining Sorts*

Q Sort	**Factor 1**	**Factor 2**	**Factor 3**
Sherri	0.7455X	0.3920	0.0291
Aubrey	-0.0907	0.7736X	0.1170
Marie	0.7092X	-0.0265	-0.1025
Alisha	0.8633X	-0.0607	-0.0038
Jenny	0.7986X	0.0621	-0.0010
Donna	0.3356	0.6170X	0.1465
Tracy	0.1374	0.5895	0.5340
Remmi	-0.0390	0.0830	0.7762X
Angela	0.7363X	0.2147	-0.1548
John	0.0046	0.8041X	0.1873
Dennis	0.4372	0.6278X	-0.2962
Penelope	0.8083X	0.3051	-0.1346
Morgan	-0.0685	0.1094	0.7070X
Rebecca	0.7139X	0.0089	0.2381
Carmen	0.5701	0.5004	-0.0673
% explained Var.	32	20	11

I present the results for each factor using (1) factor demographics, (2) a factor summary, (3) a factor sketch, and (4) a factor monologue. The demographic section for each factor identifies the participants who load on the factor and includes an exemplary sort constructed from the factor array. The factor summary gives a brief synopsis of the

shared social perspective. The factor sketch references the important items with ordinal ranks to support the interpretation. For example, each interpreted statement in the factor sketch is referenced using the number of the corresponding Q set item number followed by a colon and the factor's item rank. The factor monologue presents the interpretation from a first person point of view to enhance understanding. An explanation of the two confounded sorts is provided along with the significant consensus items shared by two or more factors. The complete factor array is provided in Appendix H. The differentiating statements, provided in Appendix I, are organized using the original crib sheets constructed during the Q analysis.

Factor 1 Transfer Partnership

Factor 1 had an eigenvalue of 5.60 and explained 32% of the variance. It was the dominant perspective among the Phase 2 participants. Seven individuals were associated with Factor 1. They were all female with an average age of 31 years. Five participants worked in specialty and two worked in primary care. They averaged 21 months of clinical practice. They all reported shadowing and reduced patient loads during their transition to practice. The average duration of their observational learning period was 36 days. Two participants changed jobs during the novice period. Penelope left her first position due to a bad work experience and to find a place where she could thrive. Rebecca changed jobs for personal reasons unrelated to the work environment. Figure 13 contains the exemplifying sort for the Factor 1 array.

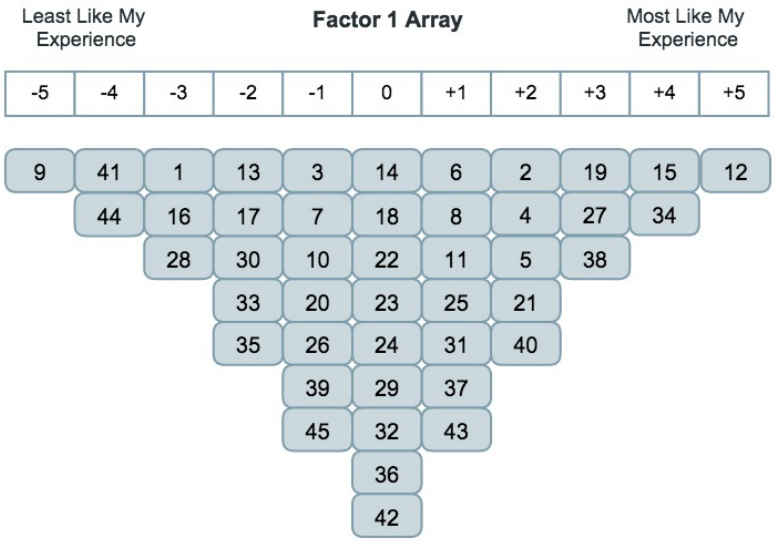


Figure 13. *Q Sort Exemplifying the Transfer Partnership Perspective*

Factor 1 Summary

Transfer partners are highly motivated, goal-oriented, novice PAs who work closely with their supervising physician to apply their knowledge during patient care. Their desire to be the best at what they do is coupled with their mentor's support during the transition period. These apprentices spend ample time observing their physicians at work before they begin seeing patients on their own. Transfer partners have the time and resources needed to develop as practitioners by acquiring new skills on the job. They are given guidance and experience a formalized training process that enhances their knowledge transfer. The organizational climate is supportive and facilitates optimal PA performance.

Factor 1 Sketch

In a transfer partnership, both the novice PA and the physician are accountable for transfer of learning. Novice PAs sharing this perspective are intrinsically motivated and value personal achievement (15:+4, 12:+5). Transfer partners are goal-orientated (12:+5) and have the discipline and drive to continue learning after they graduate from PA school (15:+4). They understand clinical practice demands and the effort required to apply the knowledge and skills learned in school effectively (19:+3). Transfer partners are confident, but not overconfident, in their abilities (14:0), and are not overwhelmed by the semi-autonomous nature of PA practice (30:-2). They are comfortable asking questions (34:+4) and never feel they are annoying their physician by doing so (33:-2). During the transition, transfer partners continue to read about medicine (20:-1, 17:-2), but choose materials relevant to their practice (42:0).

The transfer partner's organizational climate facilitates transfer, typically through a formalized onboarding process where learning tasks are identified and completed (42:+1). Transfer partners feel supported and have a sense of professional well-being (31:+1). These novice PAs learn how to apply their skills by first observing their supervising physician or other practitioners (38:+3). After the shadowing period, transfer partners benefit from an initial workload reduction, allowing them to adjust to practice demands (27:+3). They incrementally gain knowledge from their patient encounters (6:+1) while inviting challenging cases as an opportunity to learn (5:+2).

The physician is the central figure facilitating learning transfer, not nurses (7:-1). The physicians in a transfer partnership are available, patient, and encouraging (44:-4,

41:-4). These physicians meet one-on-one with their novice PAs just to review instructive cases. The PAs receive feedback about their performance (39:-1) and accept constructive criticism in order to learn (4:+2). Although these novices feel physicians are their best resources for practice information (25:+1), they also use online resources (37:+1). When their physician is not available, transfer partners seek advice from other midlevel providers (28:-3).

Factor 1 Monologue

"I feel lucky that I found this job after PA school. Don't get me wrong, there's been a lot to learn, but the transition has gone well for me. I was not thrown to the wolves like some of my friends from PA school. My doc is a great teacher and has helped me learn how to work in the real world. I spent over a month just watching her in the clinic and asking her questions. She is almost always available; if not, the other PA here can usually answer my questions."

"After that first month, I started seeing patients on my own. I wasn't really nervous because, you know, I had a backup. I felt confident I could workup difficult patients. That was good for me because, how else am I going to get better?"

"My doc and I still sit down together after work to discuss interesting patients. She takes time explaining things to me and never makes me feel silly for asking a question. Besides, I'm not opposed to tough feedback—I just learn from it. I guess you could say I enjoy being pushed a little. I don't want to miss something important. I really do want to be the best PA I can be."

"I don't think PA school can totally prepare a person for what's ahead. There's so much to learn about medicine. You have to put in the effort to learn as much as you can. You still have to read to solidify what you already know and stay up to date. I think you also have to learn what's not contained in textbooks from the docs. That's my approach."

Factor 2 Self-Reliant

Factor 2 had an eigenvalue of 2.52 and explained 20% of the variance. Four participants, two males and two females, were associated with Factor 2. Their average age was 31 years. Three individuals were in primary care, and one was in specialty practice. They averaged 21 months of experience. Their average observational learning period was 3.8 days. Three individuals did not experience a reduced workload during their transition to practice and had changed jobs during the novice period. The one participant that had a reduced workload had not changed jobs. Figure 14 contains the exemplifying sort for the Factor 2 array.

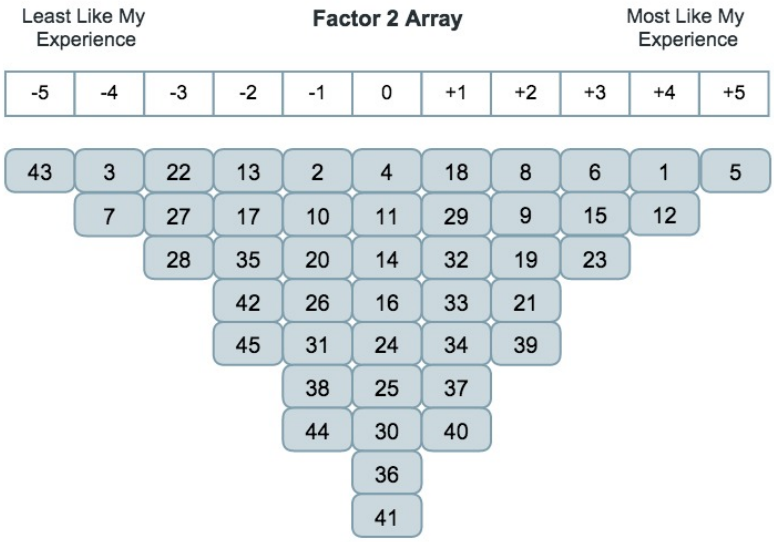


Figure 14. *Q Sort Exemplifying the Self-Reliant Perspective*

Factor 2 Summary

Self-reliant novice PAs apply knowledge and skills without much assistance from others. They learn from environmental cues and reflective practices, gaining confidence in the process. As the factor name suggests, these individuals are intrinsically motivated. They do not allow inadequate support and guidance to derail their transition to practice. Self-reliant novice PAs are not overtaken by negative emotions. They find a way to perform and transfer learning despite the unsupportive organizational climate.

Factor 2 Sketch

Self-reliant novice PAs learn by doing--treating patients in a challenging environment (5:+5). These individuals are intrinsically motivated, and goal oriented

(15:+3, 12:+4). Self-reliant novice PAs develop confidence (23:+3) by taking on challenging patients and working through diagnostic possibilities (6:+3).

They use online resources to help transfer learning into practice (37:+1). These PAs retain the information learned in school (22:-3), while identifying additional information needed for practice (19:+2, 40:+1). They fill their knowledge gaps through self-study by continuing to read after graduation (17:-2, 20:-1); however, they value real-life practice experience over books (8:+2).

Although self-reliant novice PAs feel some anxiety about hurting patients, they use the anxiety as a motivator and do not allow it to affect their performance negatively (18:1+1). They are not particularly fearful or anxious about being new clinicians with significant patient care responsibilities (2:-1, 30:0). Any initial uncertainty about their abilities is replaced by the confidence gained through practice (23:+3).

Self-reliant novice PAs are expected to adjust to clinical practice in a short time. Their employers do not provide training during the transition period (1:+4). Despite incomplete training, they are expected to practice in a mostly autonomous manner without support (9:+2). Self-reliant novice PAs sense the organization is not interested in their professional development (31:-1). They have little opportunity to learn by observing their physician in practice (38:-1), and patient loads are not reduced significantly during the transition (27:-3).

Self-reliant novice PAs have midlevel colleagues available to them if needed (28:-3). Nurses are not viewed as a potent learning resource (7:-4). Although self-reliant novices may occasionally get together with their physician to learn from interesting

cases (32:+1), they are neutral concerning the physician's value as a learning resource (25:0). Self-reliant novice PAs feel comfortable asking questions (34:+1, 13:-2), but they do not wish to bother their supervising physician and would rather find answers on their own (33:+1).

Self-reliant novice PAs make adjustments to practice based on experience rather than from formal feedback (39:+2). They embrace patient complexity as a learning opportunity and are willing to work their way through messy problems (5:+5). Self-reliant novice PAs transfer learning by being internally driven, disciplined, and focused (15:+3).

Factor 2 Monologue

"I guess you could say I like a challenge. After a couple of days in the clinic, I hit the ground running. I have always been the one to step up and get the job done. I don't know, maybe it's because I was the oldest child in my family or something."

"The physicians I work with are not into handholding; so, there wasn't a real training period. That would have been nice to have, but I was expected to pull my weight and see a minimum of 20 to 25 patients a day--and not just easy ones. Many of the patients have multiple problems like, diabetes, heart failure, and arthritis. They take a lot of different medications, some I don't know too much about."

"The nice thing is that I learn medicine from my patients. They keep me on my toes. It's good to see real-life examples of conditions I have only read about. I remember most of what I learned in PA school, but medicine requires life-long learning."

"On a few occasions, I have gotten together with one of the docs to review cases, but everyone is really busy just taking care of patients. Besides, I don't like bothering the docs when they're in another patient's room or something. I usually find the answer to my questions in UptoDate. No one tells me if I'm doing a good job, but, so far, I haven't had any patient complaints."

Factor 3 Insecure

Factor 3 had an eigenvalue of 1.29 and explained 11% of the variance. Two participants loaded on Factor 3, both females. Their average age was 26. Morgan worked in specialty practice and Remmi worked in primary care. They averaged 21 months of clinical practice. Both participants reported shadowing and reduced workloads during their transition. Their observational learning period was 5.5 days. Both participants changed jobs once during the novice period. Figure 15 contains the exemplifying sort for the Factor 3 array.

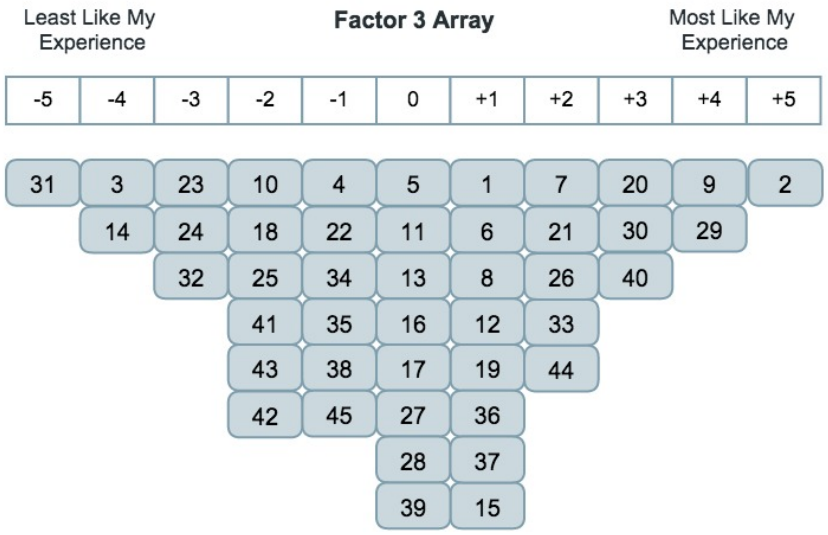


Figure 15. *Q Sort Exemplifying the Insecure Perspective*

Factor 3 Summary

The insecure novice PA perspective is related to inadequate physician and environmental supports during the transition to practice. The term "insecure" describes the perspective and is not intended to reflect fixed individual personality traits. The insecure novice's clinic setting is busy and the patients are challenging. The insecure novice is expected to practice autonomously from the beginning. The job demands create unwelcome anxiety that further impedes transfer of learning. Insecure PAs are unable to establish an effective transfer partnership with the supervising physician and experience difficulties in gaining confidence and positive feelings about PA practice.

Factor 3 Sketch

Insecure novice PAs lack confidence in their ability to apply their knowledge and skills in practice (14:-4, 23:-3). They are somewhat intrinsically motivated (12:+1,

15:+1); however, they experience a combination of isolation (9:+4) and uncertainty during the transition period (2:+5). Insecure novices recognize clinical practice requires continued learning (26:+3), but their schedules leave little time for learning activities (29:+4), and self-study is not a priority (20:+3, 42:-2). They are thrust into practice (43:-2) and feel overwhelmed by their level of autonomy (30:+3).

The insecure novice's organization does not provide adequate support (31:-5). Formalized onboarding processes are lacking (1:+1) and the observational learning period is short (38:-1). Insecure novices view their physicians as busy individuals who are unavailable (26:+2, 44:+2). As a result, these PAs often avoid "bothering" their supervising physicians (33:+2). Nurses and other midlevel providers are the preferred information sources (7:+2, 44:+2).

Inadequate physician support impedes transfer of learning for insecure novice PAs. Negative emotions define the insecure novice's transition to practice. Individual and environmental factors lead to suboptimal novice PA transfer of learning.

Factor 3 Monologue

"I have been working in this practice for almost two years but I'm thinking seriously about changing jobs. Things have been rocky from the start. My orientation lasted five days and then I was told to start seeing patients on my own. It was scary because the patients had lots of problems I didn't know how to handle. PA school was great, but it didn't prepare me for this. I have a patient scheduled every 15 to 20 minutes, which doesn't allow me much time to deal with their complaints. I'm still

anxious about going to work because it's only a matter of time till I make a big mistake. The responsibility is overwhelming at times."

"The docs in the clinic are busy seeing their own patients. Sometimes I feel like they forget I am here. I have tried to get them to explain things to me, but they are eager to do their own charting and get out of here. I think they are really stressed out too. Besides, I don't want to them to think I don't know anything. Fortunately, one of the nurses has been here a long time. She knows the routine; so, I ask her what the docs would do with certain cases."

"I guess I should read more than I do, but I'm so tired at the end of the day. My pile of journals is stacking up and I don't know when I am going to find the time to tackle it. I do want to be a good PA; I just wish my physicians could spend more time with me. I think that would help a lot."

Confounded Sorts

Two sorts were confounded, meaning they did not load significantly on a single factor. Each of these sorts represented a blended perspective. Both participants with confounded loadings were female with an average age of 28 years. Each novice PA had worked for a period of 26 months in primary care. During the transition, one participant had a reduced workload, whereas the other did not. Their average observational learning period was 18 days. One participant changed jobs to learn new skills, while the other remained in the same position during the entire transitional period. The participant that changed jobs cross-loaded on Factors 2 and 3, sharing views with participants in those categories. The other participant cross-loaded on Factors 1 and 2. A manual rotation

following varimax caused one participant to load on Factor 1 and the other to load on Factor 3, with coefficients greater than 0.60. Despite the adjustment, both participants loaded > 0.40 on other factors. Removing the two confounded sorts did not significantly alter the factor estimates or direction of items in the factor array.

Consensus Statements

Eight statements did not distinguish between any pair of factors at p>.05. Two of the eight statements reached consensus across all three factors:

- I learn by remembering patients I have seen with similar problems. It's all about repetition and becoming familiar with things to look for. (+2, +2, +2)
- I frequently use one or more of the following: UptoDate, Medscape, Epocrates, e-Medicine, First Consult, or other online decision support tools. (+1, +1, +1)

Six statements shared common rankings between two of the three factors:

- You never get the subtleties of medicine from a textbook; you get them from people who have been in the field. (+1, +2, +1)
- It took time for my supervising physician to learn how to work with a PA. (-1, -1, -2)
- I kind of feel silly asking questions because it's usually something I should know at this point. (-2, -2, 0)
- I frequently use a pocket manual that's short, to the point, and has a lot of algorithms. (-2, -2, -1)
- I think have retained most of what I learned in PA school. (0, 0, -1)
- My physician(s) does/do not know how to utilize a PA. (-1, -2, -1)

Supplemental Findings

This section contains additional findings not directly related to the original research questions. These findings, however, contribute to the study's purpose by presenting additional contextual details about the interaction between the participants and their physician supervisors, as well as signs of PA inclusion in the practice. These findings were reported by the participants or obtained from observations conducted in Phase 1.

Supervision

Routine and responsive oversight were reported more often than direct concurrent care and backstage chart review. Figure 16 compares the reported supervisory methods by practice type. The participants reported only known chart review activities. Given the nature of backstage chart review, it is possible participant reporting was unreliable. Reporting for the other three types of supervision was considered reliable because the novices were involved in the activities.

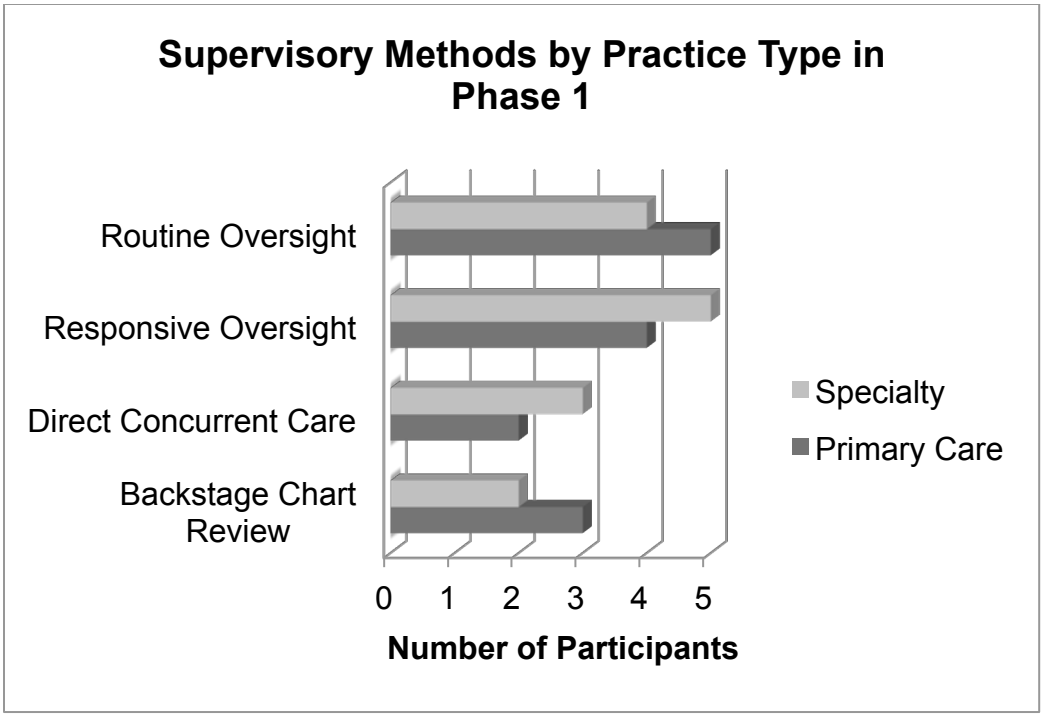


Figure 16. *Coding Source Comparison of Supervisory Themes*

Half of the participants reported direct concurrent care; however, this form of supervision was usually temporary. The novice PAs started out seeing the patients together with their supervisor during a provisional practice period. Chelsea remembered "…I couldn't bill yet and so…we [would] co-see patients so he would kind of oversee what I did." Mike was also required to see patients alongside his physicians for the first six months. This closely monitored supervision allowed Mike's physicians to gradually increase his autonomy. Mike began "working-up" patients while still relying on his physicians to initiate treatment. After six months, he was given his own clinic schedule. Mary was the exception. She continued direct concurrent care alongside her surgeon during a portion of the week. Mary explained:

> I was usually just in the clinic alone one day a week because the other days I was in surgery with him or in clinic with him. You know how doctors are; they don't want to be in clinic alone because they don't want to have to do all that (laughs).

Routine oversight occurred when the practice established a regular supervisory process. For example, Jo met with her supervising physician every afternoon to review patient care decisions. Routine supervision was often temporary as well. In Beth's case, the supervisor signed off on every chart for the first six months and then transitioned to responsive oversight. Kathy reported the transition from routine oversight to responsive oversight occurred "gradually" over three to four months.

All but one of the participants reported responsive oversight. This type of supervision was triggered rather than routine. For example, Alfredo sees his patients without the physician unless there is a problem. Alfredo explained:

> …If there's something that is, you know, maybe wrong with a wound, wrong with the patient, the pain is completely out of whack and, uh, it wasn't the previous visit. Um, or, if it's just multiple, multiple fractures, you know, maybe all four extremities type of thing, you know, I'll ask the doctor to come in and, and help me.

Kathy initiated supervision this way: "…I make documentation of, charts that I want to review with him and…update him on…how this patient is doing. Do you have anything else you want me to be addressing? Do you have any concerns?" Mandy described her physicians as "very much hands off and unless there's like an immediate concern."

Half of the participants reported chart review by their physicians. For some, the supervisor reviewed and signed all of their patient charts. Mary's clinic incorporated a mandatory review in the electronic medical record. She explained:

> We have a little marker…built into our notes where there is like a triple asterisk that she [the physician] cannot close the note as long as it has a triple asterisk in it. It's like the program won't allow it.

For other participants, the supervisor only reviewed a percentage of their charts. Beth said, "He reviewed 100 percent of my charts at the beginning and then [after] probably about six months, he was reviewing 30 percent of my charts, and now it's somewhere between 10 and 30 [percent]." These various types of supervision guided novice practice during the transition to clinic.

Inclusion

Because support and isolation were factors related to transfer of learning, I present additional information about participant inclusion in practice. Internet profiles, dedicated office space, signage, and business cards were considered observable evidence of PA inclusion in their practice setting. Inclusion data was obtained for all study participants through direct observation or by report when visits occurred off site.

Fifteen participants (60%) had a web presence, including seven with full profiles, four with name and photo, and four with name only. Sixteen participants (64%) had dedicated offices, although seven individuals shared the space. Of the nine participants without dedicated offices, six worked in hospital or ER settings. Fourteen participants (56%) had business cards featuring their name. Lastly, five participants (20%) were

featured on clinic signage. The average number of observed inclusion variables was 1.6 for Phase 1 and 2.0 for Phase 2.

The Phase 1 participants who reported isolation averaged 1.6 observable inclusion variables, compared to 2.4 observable inclusion variables for Phase 1 participants who did not report isolation during their interviews. Two individuals, who worked in an ER setting where practices differ from outpatient clinics, influenced the number of observable variables for those reporting isolation. Excluding those two individuals, the average was 2.3 variables for those reporting isolation.

The Phase 2 participants who shared the transfer partnership perspective averaged 1.9 inclusion variables, compared to 3.0 inclusion variables for the Phase 2 participants loading on the self-reliant and insecure perspectives. The lower number of observable inclusion variables for those sharing the transfer partnership perspective was influenced by two individuals working as hospitalists who felt supported despite lack of office space, business cards, and signage. Excluding those two individuals, the average number of inclusion variables was 2.4 for the participants sharing the transfer partnership perspective. Therefore, when triangulating observation, interview, and sorting results, I did not find observable evidence of inclusion to be a reliable indicator the participants' perspectives or perceptions of isolation.

Summary

In this chapter, I presented the research findings for both study phases. The Phase 1 analysis resulted in seven major themes related to the first three research questions. The Phase 2 by-person factor analysis revealed three shared social

perspectives among the novice PAs participating in the study, thereby addressing the fourth research question. The participant profiles and supplemental findings described the study's context.

The Phase 1 participants provided details concerning (a) direct transfer, (b) transfer failure, (c) indirect transfer, (d) individual transfer facilitators, (e) work environmental transfer facilitators, (f) individual transfer inhibitors, and (g) work environmental transfer inhibitors. These key themes addressed the question concerning novice PA perceptions about their transfer of learning and the questions concerning facilitation and inhibition of that process. The participants directly transferred basic medical knowledge to treat common conditions and relied on the clinical skills they learned in school. Transfer failure was attributed to inadequate initial learning of specialty knowledge and to lack of practice. The participants provided examples of indirect transfer, such as generalization, adaptability, and maintenance. The individual factors facilitating transfer of learning were confidence, motivation, self-study, and reflective practices. The environmental factors facilitating transfer of learning were observational learning opportunities, reduced initial workload, support, learning resources, and formalized training. The individual factors inhibiting transfer of learning were negative emotions, diminished motivation, confidence problems, isolation, and time constraints.

In Phase 2, three shared social perspectives concerning transfer of learning were revealed using Q methodology. The shared perspectives were (a) transfer partnership, (b) self-reliant, and (c) insecure. The novice PAs sharing the transfer partnership

perspective were able to transfer learning effectively by combining individual and environmental transfer facilitators. The participants sharing the self-reliant perspective faced environmental obstacles to transfer but were able to use individual transfer facilitators effectively. Finally, the novice PAs sharing the insecure perspective experienced both individual and environmental transfer inhibitors, making transfer of learning from PA school to practice difficult.

In the next chapter, I first draw conclusions from these findings and situate the study results within the body of literature reviewed in Chapter II. Second, I discuss the study's implications related to the theories outlined in my conceptual framework. Lastly, I review the study's implications for practice and future research.

CHAPTER V

SUMMARY, DISCUSSION, AND IMPLICATIONS

This final chapter includes a study summary, a discussion of novice physician assistant (PA) transfer of learning, as well as the implications for practice, theory, and research. In the study summary, I review the research purpose, methodology, research questions, conceptual framework, and methods. In the discussion, I relate my findings to the empirical literature and the conceptual framework. The discussion addresses the research questions and contains conclusions generated from the findings. I complete this chapter by exploring the implications for PA training, PA clinical practice, transfer of learning models, adult experiential learning theories, and future research.

Study Summary

Physician assistant training is much shorter than physician training; yet, PAs perform the bulk of a physician's duties in various clinical settings. Little research has been conducted to determine how PAs adapt to such a high practice level following two to three years of training. Gitonga (2007) defined transfer of learning as, "…the effective and continuing application of knowledge, skills, and attitudes learned/acquired from training on the job, generalization, and subsequent maintenance of these over a certain period of time" (p. 1). The purpose of this sequential mixed interpretive study was to describe transfer of learning in novice PAs as they transition from formal training into clinical practice. For this reason, I employed a mixed interpretive study design

combining naturalistic multicase study and Q methodology to describe transfer of learning based on the experiences and perceptions of two groups of novice PAs.

This study was the first to describe novice PA transfer of learning by combining two interpretive methodologies. I selected a mixed design in order to provide scholars and practitioners a comprehensive and relatable description of the phenomenon. The interpretive approach allowed me to search for competing explanations of how novice PAs transfer learning. Multicase methodology allowed me to obtain rich data for thematic cross-case analysis (Merriam, 2009). Q methodology (a type of discourse analysis) allowed the meaning of statements from one group of novice PAs to be assessed by separate group of novice PAs (Webler, Danielson, & Tuler, 2009). The two methodologies were applied to answer the following research questions based on the lived experience of novice PAs in Texas:

- What perceptions do novice PAs have about their transfer of learning during the transition to clinical practice?
- What are the factors facilitating novice PA transfer of learning?
- What are the factors inhibiting novice PA transfer of learning?
- What is the pattern of shared perspectives, if any, that novice PAs have about transfer of learning during the transition to clinical practice?

The study was situated within the literature concerning (a) nonphysician providers, (b) novice clinician transitions, and (c) professional development. Due to the limited number of studies examining PAs (Marincic & Ludwig, 2011; Polansky, 2011), I reviewed 25 additional studies concerning novice physicians (residents) and nurse

practitioners (NPs). As discussed in Chapter II, the five themes that emerged from the literature review included (1) preparedness, (2) learning process, (3) learning aids, (4) learning barriers, and (5) learning context. In Phase 1 of the study, similar themes emerged in relation to novice PA transfer of learning. For instance, preparedness was analogous to direct transfer (the ability of novice PA to use their knowledge and skills immediately). In addition, the novice PA participants considered many of the learning aids and barriers identified in the literature as transfer of learning facilitators and inhibitors. These comparisons will be explained further in the discussion section of this chapter.

The study's conceptual framework contained transfer of learning and adult experiential learning theories and models. Baldwin and Ford's (1988) transfer of learning model, revised by Gitonga (2007), falls within a positivistic/behavioristic research paradigm. Such models seek to illustrate the links between "…causal elements that might account for, predict, and control human behavior" (Elias & Merriam, 2005, p. 110). Gitonga's version of the model focused on physician transfer of learning resulting from continuing medical education (CME) activities. Gitonga identified physician learner characteristics, CME design, and physician work environment as factors influencing physician behavioral change. The factors within the model either facilitate or inhibit transfer of learning and, therefore, relate to two of my research questions.

Another model that informed my study, devised by Dornan et al. (2007), depicts the progression from medical student to doctor. This constructivist model illustrates how curricular factors, human interactions, supported participation, and participant

outcomes are interrelated. With the support from others, the novice physician moves through the roles of passive observer, active observer, actor in rehearsal, and actor in performance (Dornan et al., 2007). Consequently, positive mind states and practical competence develop and further facilitate the transition to practice (Dornan et al., (2007).

Although these models were useful graphical representations of transfer of learning in clinical settings, additional theories were considered to understand how the process works (Goodson, 2010). According to Furman and Sibthorp (2013), experiential learning mediates transfer of learning in adults. For this reason, I considered adult experiential learning theories within a constructivist paradigm. I contemplated the value of reflection-in-action (Schön, 1983), the potential for nonreflective practice (Jarvis, 1987; Jarvis, 1992), and concepts related to cognitive apprenticeship (Collins et al., 1987; Farmer et al., 1992). The importance of the study findings in relation to these models and theories is covered in the implications section of this chapter.

I conducted the study in two Phases. In Phase 1, I used naturalistic multicase study (Yin, 2014) in order to gather robust data concerning transfer of learning in different settings. The multicase design allowed me to compare and contrast the experiences and perceptions of PAs working in primary care with the experiences and perceptions of PAs working in specialty practice. Furthermore, I was able to sample the Phase 1 data to create a research instrument (the Q set) for use in Phase 2.

Mixing the methods allowed me to "…address more complicated research questions and collect a richer and stronger array of evidence than can be accomplished

by any single method alone" (Yin, 2014, p. 66). In Phase 2, I used Q methodology, a hybrid methodology that uses by-person factor analysis to uncover the structure of peoples' shared perspectives (McKeown & Thomas, 2013).

I used stratified purposeful sampling to select homogeneous subgroups based on practice characteristics (Creswell, 2012). Stratification allowed me to compare primary care PAs and specialty PAs. All participants were PAs licensed by the state of Texas who had been practicing a minimum of 12 months and a maximum of 28 months (the main inclusion criteria). Ten novice PAs participated in Phase 1 of the study, five in primary care and five in specialty practice. Fifteen novice PAs participated in Phase 2, eight in primary care and seven in specialty practice.

In Phase 1, I used semistructured interviewing and nonparticipant observation to collect data with IRB approved protocols (Erlandson et al., 1993; Merriam, 2009). The interviews were conducted on site when allowed. Written consent was obtained before data collection. The participants selected a pseudonym to protect their identity. Each interview was recorded, and verbatim transcripts were created.

I analyzed the Phase 1 data inductively by reconstructing individual units of meaning into thematic categories. I followed Creswell's (2012) six steps of data analysis: (1) preparing and organizing the data, (2) exploring the data, (3) coding the data, (4) developing themes, (5) representing the findings, and (6) validating the findings. The source files were imported into Nvivo®. Prior to coding, I read the transcripts along with the recorded audio. The Phase 1 participants also received their transcripts by email to check for accuracy. A preliminary thematic structure was created

using the themes from the literature review and the conceptual framework. The drag-and-drop method was used to code the source files. The findings were then represented graphically using a software program called IMindmap®. I then explored the hierarchical connections within the diagram (Creswell, 2012).

The preliminary thematic placeholders (called *nodes* in NVivo®) not containing coded units were deleted. I combined redundant nodes and collapsed subordinate nodes into parent nodes to generate the final thematic structure. I also performed matrix queries of the coded data within NVivo® to obtain cross-case comparisons by practice type. Lastly, a draft of the thematic analysis contained in Chapter IV was sent to each Phase 1 participant to check for interpretive accuracy.

In Phase 2, I collected data from Q sorts, post-sorting interviews, and nonparticipant observation. Forty-five statements were sampled from the Phase 1 interviews and piloted with two PA faculty peer reviewers. Each statement was printed on a separate card and numbered to form a Q set (card deck). Initially, the participants separated the cards into three stacks: (1) *like my experience*, (2) *undecided or neutral*, and (3) *unlike my experience*. Next, the participants sorted each of the three stacks by placing the cards on an inverted quasinormal sorting grid-- beginning at the tails. The grid was divided into columns with a range from -5 (*least like my experience*) to +5 (*most like my experience*). The position of each card was marked on the sorting grid and documented on the IRB approved Q tracking form. I conducted post-sorting interviews with the participants to assess the representative nature of the sort and to obtain contextual information.

I analyzed the Phase 2 data using by-person factor analysis, varimax rotation, and abductive interpretation (Watts & Stenner, 2012). The sorts were entered into the PQMethod software (Schmolck, 2014) to generate a correlation matrix. I conducted a parallel analysis (Horn, 1956) using the Stata® software. Parallel analysis involves the creation of a correlation matrix of 1000 random sorts of the data in order to generate eigenvalues (Dinno, 2009). I compared the eigenvalues and scree plot from the study data with the values from the random data set. Based on the results, I decided to extract three factors (shared perspectives) using varimax rotation, a procedure that "…maximizes the amount of study variance explained" (Watts & Stenner, 2012, p. 125). I recognized the possible random nature of the eigenvalue assigned to factor three, but retained factor three based on the Kaiser-Guttman rule (Guttman, 1954; Kaiser, 1960) and S.R. Brown's (1980) two sort per factor minimum. I removed two confounded sorts because they cross-loaded on two factors (Watts & Stenner, 2012). I assembled the final output and examined the final statement array. I recorded the differentiating statements on separate crib sheets for each factor. I then used the sheets to create a factor summary, factor sketch, and factor monologue for each of the shared perspectives (Watts & Stenner, 2012). An expert in Q methodology reviewed my Phase 2 data, analysis, and interpretation. In the next section, I situate the findings within the literature and address each of the research questions.

Discussion

This study fills a gap in the literature concerning how PAs apply their knowledge and skills during the first 12 to 28 months of practice. Overall, I found novice PAs transfer learning in a variety of ways depending on a complex amalgam of prior experience, individual characteristics, and environmental conditions. The findings supported two of my four working hypotheses outlined in Chapter III:

- Some novice PAs transfer learning as a result of support from their supervising physician(s) and/or peers while other novice PAs transfer learning without support.
- Heavy workloads, time constraints, and negative emotions are barriers to novice PA transfer of learning.

However, two of my working hypotheses were not fully supported:

- Some novice PAs exhibit indirect transfer of learning while other novice PAs exhibit only direct transfer of learning.
- Novice PAs working in primary care settings transfer learning with less difficulty than novice PAs working in specialty practice.

The investigation also corroborated the following results from my pilot study:

- Physicians and peers were cited as reliable sources of information about how to practice.
- Some participants reported excellent relationships with physicians while others reported suboptimal relationships with physicians.
- Isolation emerged as a subtheme for a subgroup of participants.

- Self-identified deficiencies included prescribing medications, specialty knowledge, and dealing with complex patient presentations.
- The majority of participants felt prepared to treat common medical conditions.

Research Question 1

What perceptions do novice PAs have about their transfer of learning during the transition to clinical practice? Novice PAs in the study shared perceptions about their ability to transfer learning and provided examples of direct transfer, transfer failure, and indirect transfer.

Direct transfer. The Phase 1 participants reported direct transfer of the following: (a) general medical knowledge when managing common complaints, (b) H&P skills, (c) emergency recognition, and (d) basic procedural skills. The participants reported immediate transfer of skills such as: "history and physicals," "reading basic labs," "suturing lacerations," "how to scrub," "treating strep [throat]," "treating hypertension," and "[identifying] alarm symptoms." These findings align with the results of prior investigations. For instance, Marincic & Ludwig (2011) reported novice PAs felt prepared to deal with common medical conditions, such as hypertension, diabetes, and respiratory infections. Similarly, Prince et al. (2004) found "…Basic knowledge was sufficient and that knowledge, they [junior physicians] thought had vanished, could be recalled pretty quickly" (p. 328). In addition, novice clinicians commonly transferred H&P skills without difficulty (Marincic & Ludwig, 2011; Ochsmann et al. 2011; Prince et al. 2004; Rosenzweig et al. 2012). Furthermore,

Sheehan, Wilkinson, & Bowie (2012) recognized novice clinicians' abilities to assess patient "acuity" and perform basic clinical procedures during the first year of practice.

Transfer failure. The majority of the Phase 1 participants perceived difficulty applying specialized knowledge and half described problems prescribing medication. The Phase 1 participants found the basic medical knowledge learned in PA school was insufficient to deal with specialized patient problems in cardiology, neurology, orthopedics, and dermatology. The participants used phrases like "derm is hard," "neuro is a big weakness," and "orthopedic complaints are tough." These findings substantiated the experiences of other novice clinicians. For instance, Rosenzweig et al. (2012) found novice oncology NPs lacked knowledge specific to oncology practice and had to learn the specialty "almost exclusively" from the physician.

The Phase 1 participants identified specific tasks they were unprepared to handle such as "reading x-rays," "reading EKGs," "placing chest tubes," "medication dosing," "drug interactions," and "drug-seeking behavior." Similar limitations are reflected in the literature, particularly when prescribing. For instance, Ochsmann et al. (2011) found half of the novice physicians studied reported deficiencies in their knowledge of "…how to treat diseases through the administration of drugs, [and] how to calculate drug dosages" (p. 2). Likewise, Prince et al. (2004) found, "Real gaps in knowledge concerned prescribing medication, particularly in non-standard situations" (p. 328).

Indirect transfer. In contrast to transfer failure, the Phase 1 participants also provided examples of indirect transfer including generalization, adaptability, and maintenance. Some individuals developed refined approaches to address the practical

aspects of patient care and to improve efficiency. Prior investigators did not use the terms generalization, adaptability, and maintenance in reference to learning; however, a few described novice skill development during the transition. For example, Sheehan, Wilkinson and Bowie (2012) reported efficiency as a workplace-learning theme in their study of junior physicians. The junior physicians shortened their physical exams and made diagnostic refinements by "no longer check[ing] everything" (Sheehan, Wilkinson & Bowie, 2012, p. 940). Likewise, Teunissen et al. (2007) described novice physicians who streamlined their patient assessments after first trying to "do everything by the book" (p. 767). These descriptions exemplify adaptability, but not generalization and maintenance.

The following conclusions can be drawn from these findings:

- PA programs, like other clinician training programs, teach basic medical knowledge and skills that can be used immediately in patient care.
- It appears transfer failure increases as patient complexity escalates.
- Initial pharmacology training may not prepare novice clinicians fully; therefore, refined prescribing practices must be learned on the job.
- Novice PAs, like other novice clinicians, adapt their knowledge and skills to "real-world" practice conditions.

Research Question 2

What are the factors facilitating novice PA transfer of learning? Individual and environmental factors facilitate novice PA transfer of learning.

Individual transfer facilitators. The individual factors identified included confidence, motivation, self-study, prior experience, and reflective practices. Confidence was not only the result of successful transfer, but also facilitated additional transfer. The participants felt confidence was a result of "sticking with it," "becoming comfortable and familiar," "repetition," "getting into the flow of things," and "moving to the next level." Hoifodt, Talseth, and Olstad, (2007) explained novice physicians gained confidence through practice, causing them to explore patient problems "more deeply" (p. 7). The study participants expressed differing amounts of confidence, dependent on factors such as the severity of the patient's illness and their prior experience with the condition. Some participants experienced an initial period of hesitation but were able to apply their knowledge and skills as their confidence improved, over time.

In addition to confidence, motivation was an individual trait that facilitated transfer. Ford and Weissbein (1997) suggested that goal-oriented motivation would likely facilitate transfer of learning more than process-oriented motivation. Both forms of motivation were identified in Phase 1 of the study. The participants described their motivation with phrases like "being the best," "knowing something really well," "making people better," and "to keep from hurting patients." Both forms of motivation facilitated transfer of learning. The desire to be the best PA (goal-orientation) and the desire to produce satisfactory patient outcomes (process-orientation) are related. Gitonga (2007) simply identifies motivation as the desire "…to improve work through learning" (p.3). Sagasser et al. (2012) concluded the desire to be a good clinician is a powerful intrinsic motivator for self-study (Sagasser et al., 2012).

In Phase 1, five out of ten participants reported self-study activities. The participants engaged in self-study in response to specific problems and to fill general knowledge gaps encountered during patient care. Similarly, Li, Favreau, and West (2009) found 56% of the residents in their study engaged in self-directed learning to facilitate patient care. Furthermore, Slotnick (1999) examined the self-study habits of practicing physicians and found a consistent behavioral pattern. Slotnick explained physicians typically read available journals to answer specific problems; however, they read more broadly and take courses to fill general knowledge gaps. It appears that some novice PAs exhibit the same behavior.

A few Phase 1 participants discussed the value of prior experience in other health professions. As a result of their experience, the participants gained confidence dealing with patients and other professionals. According to Flemming and Carberry (2011), NPs with prior ICU nursing experience took a reflective and holistic approach to patient problems. Lastly, reflective practices facilitated transfer. Teunissen et al. (2007) explained, "All sorts of information is embedded in work-related activities" (p.766). The authors proposed novice clinicians reflect on that information, codify the knowledge, and modify future practice. Clinicians reflect on the problems encountered, their ability to solve the problems, the available resources, the time required, and the need for consultation (Slotnick, 1999).

Work environmental transfer facilitators. In my study, the environmental factors facilitating transfer of learning included observational learning, reduced initial work demands, physician support, peer support, nurse support, learning resources, and

formalized learning opportunities. Kilminster et al. (2011) argued that variations in the work environment explain why investigators often fail to provide "empirical evidence" of knowledge transfer from medical school. Therefore, it is not surprising that support for novices in the study varied by type, amount, and duration.

On average, the study participants shadowed their physicians and other midlevel providers for 30 days. According to Polansky (2011), 60% of novice PAs received "a structured orientation period prior to assuming patient care duties, typically four weeks or less in duration" (p. 46). During orientation, observation was the most frequently reported activity (Polansky, 2011). Other investigators attested to the value of observation during the transition to practice (Brown, Chapman, & Graham, 2007; Matheson et al., 2010; O'Neil et al., 2003). However, none of these investigators mentioned the reduced initial workloads described by my participants.

For most participants in my study, the supervising physician was the central figure supporting transfer of learning. The supportive physicians were described as "intelligent," "patient," "helpful," and "willing to teach." Peers and nurses provided information only when physicians were less involved or less accessible. Nurses occasionally guided the novice's treatment decisions. This behavior has been previously described in other novice clinicians (Kilminster et al., 2011). Polansky (2011) confirmed supervising physicians facilitated novice PA learning more often than peers or other professionals. These findings differ from resident physicians who seek help from peers before moving up the hierarchy (Farnan et al., 2008; Hoifodt, Talseth, & Olstad, 2007).

As revealed by Stalmeijer et al. (2009), apprenticeship practices in my study had "variable" penetrance. My participants mentioned modeling, informal discussions, and case review more frequently than hands-on teaching and the guided selection of reading materials. This pattern resulted from different levels of physician engagement.

Lastly, the participants frequently used online resources (e.g., UptoDate) to obtain practice guidance. Polansky (2011) found such online resources were rated as "very helpful" by 77% of her novice PA respondents. Sagasser et al., (2012) explained:

> When trainees realized they knew nothing at all about a problem, they generally asked their supervisor for immediate advice during the consultation. When trainees realized their knowledge was insufficient but knew where to find the answer, they solved the problem by looking it up…. (p. 4)

The conclusions drawn from these findings include:

- Novice PAs, like other clinicians, have various individual characteristics and behaviors that can enhance their ability to apply knowledge and skills in practice.
- The supervising physician, when involved, is the most influential environmental transfer facilitator for novice PAs.
- Novice PAs routinely use online resources to recall information and/or guide clinical decisions in the absence of physicians and peers.

Research Question 3

What are the factors inhibiting novice PA transfer of learning? A combination of individual and environmental factors also inhibited PA transfer of learning.

Individual transfer inhibitors. The individual transfer inhibitors were negative emotions, diminished motivation, and confidence problems. For example, participants described their emotions as "feeling overwhelmed," "stressed," "nervous," "hesitant," and "sick to my stomach." These negative emotions are reported in the literature concerning other novice clinicians (Kelly & Mathews, 2001; Sheehan et al., 2012; Westerman et al., 2010). Novice clinicians understand their actions directly affect patient outcomes and fear making fatal mistakes (Cusson & Strange, 2008). The NPs studied by Cusson and Strange reported crying and having sleep disturbances, similar to some of the Phase 1 participants. The negative emotions are initially intense but may diminish over time (Kelly & Mathews, 2001).

In addition, diminished motivation inhibited the learning process for some Phase 1 participants. According to Sagasser et al. (2012), "Most trainees [resident physicians] found themselves active learners, but a few considered themselves passive learners, tending to postpone learning activities or only engaging in them when prompted to do so by others" (p. 6). Furthermore, the Phase 1 participants identified problems with confidence (i.e. overconfidence and inadequate confidence) as transfer inhibitors. Wilkinson and Harris (2002) identified both of these traits in borderline interns, adding that inadequate confidence was more common than overconfidence.

Work environmental transfer inhibitors. The environmental transfer inhibitors identified in Phase 1 were isolation, complex patients, and time constraints. Six out of 10 participants identified such problems. The isolated participants used phrases like "on my own," "by myself," "time alone," "sink or swim," and "hit the ground running" to

relate their experience. In addition, participants described their schedule as "rushed," "just swamped," and "insanely busy." These working conditions contribute to, and perhaps amplify, negative emotions. Dyess and Sherman (2009) stated, "Today's health care environments are often extremely chaotic. In the midst of the chaos, new graduates can feel overwhelmed and professionally isolated" (p. 407). Newly graduated nurses are frequently given full patient loads "…without reasonable access to expert counsel or practice support" (Duchscher, 2008, p. 444). As discussed by Irby (1995), educational support in clinical work environments "… is characterized by variability, unpredictability, immediacy, and lack of continuity" (p. 898). This 20-year-old description still applies to the work environments of some novice PAs.

Employers often focus on clinical productivity and set aside activities facilitating transfer of learning. For example, some novice PAs did not have an orientation and were expected to work autonomously without feedback. This finding mirrors the experience of some novice NPs (Kelly & Mathews, 2001; Sullivan-Bentz et al., 2010). Likewise, resident physicians have reported unfacilitated transitions without feedback (Brown, Chapman, & Graham, 2007). Transfer of learning required more effort when patient problems were complex, a finding confirmed by Sagasser, Kramer, and van der Vleuten (2012). In addition, some novice PAs reported difficulties adjusting to a practitioner's workload in comparison to a student's workload, which is a problem also reported by resident physicians (Sheehan, Wilkinson, & Bowie, 2012). Heavy workloads alone can cause cognitive overload and fatigue (van Hell et al., 2008). The conclusions drawn from these findings include:

- Novice PAs, like other clinicians, experience a variety of emotions. Negative emotions impair transfer of learning.
- Some work climates isolate novice PAs, requiring autonomous practice without feedback.
- Novice PAs with heavy workloads experience cognitive overload and fatigue, which inhibits transfer of learning.

Research Question 4

What is the pattern of shared perspectives, if any, that novice PAs have about transfer of learning during the transition to clinical practice? The novice PAs in Phase 2 shared three differing social perspectives: (a) transfer partnership, (b) self-reliant, and (c) insecure. Although no prior studies of novice clinicians have used Q methodology to determine the concourse related to transfer of learning, some studies have included participants who share similar perspectives.

Brown, Chapman, and Graham (2007) identified residents who were supported and received regular feedback, as well as residents who were unsupported and without feedback. The residents "…who felt they were making good progress were often those who felt they were part of a well-supported team" (Brown, Chapman, & Graham, 2007, p. 658). On the other hand, the residents "…who felt they were not guided or advised how to undertake their new professional responsibilities tended to feel undervalued and under-recognised as individuals" (Brown, Chapman, & Graham, 2007, p. 653). Similarly, Sullivan-Bentz et al. (2010) reported some NP's shared a perspective of inclusion while others felt excluded due to strained interprofessional relations and

unsupportive environments. In another study of NPs, the perspectives were directly related to the nature of physician involvement. Cusson and Strange (2008) reported some NPs experienced "supportive" physicians while others went unrecognized and considered leaving the profession. These dichotomous perspectives surrounding support did not explore the concourse deeply enough to define the difference between self-reliant novices and insecure novices. This distinction appears to be a novel contribution to the literature. The shared social perspectives demonstrate how the interactions of individual characteristics within the practice environment lead to different descriptions of novice PA transfer of learning. The conclusions drawn from these findings include:

- Novice PAs who share the transfer partnership perspective transfer learning from school into practice by coupling optimized environmental support with individual strengths.
- Despite inadequate support, novice PAs who share the self-reliant perspective transfer learning from school into practice by using their individual strengths to work through patient problems.
- Novice PAs who share the insecure perspective have difficulty transferring learning from school into practice due to suboptimal environmental support and the influence of negative emotions.

Implications

Practice

Transfer of learning is the primary goal of PA education and is essential for successful clinical outcomes. For this reason, this study has implications related to PA

education, PA clinical practice, and PA graduates. The results may be useful to PA program directors, faculty members, graduates, employers, and professional organizations.

PA education. Three implications relate to PA education. First, PA educators may wish to consider ways to increase the transfer of specialty knowledge. PA programs frequently emphasize primary care despite the fact that 67% of PA graduates work in specialty practices (Glicken & Miller, 2013). The participants experienced more difficulty transferring specialty knowledge. Therefore, more time devoted to specialty instruction may be considered. This objective can be accomplished by: (a) redesigning the didactic curriculum, (b) adding program hours/length, and (c) providing specialty tracks during the clinical year. PA programs deliver an average of 108 credit hours over 26 months (Physician Assistant Education Association, 2013). If program directors choose not to lengthen PA training, they can opt to refine the curriculum. Educators can reduce instructional hours for ancillary topics in favor of specialty topics. In addition, program personnel can assess the students' desire for specialty practice and customize the clinical training year to include more experiences in the desired specialty.

Second, PA educators may wish to address the difficulties new graduates encounter when prescribing medications. PA programs deliver an average of 86 clock hours (5.7 credit hours) of pharmacology and pharmacotherapeutics (Scott et al., 2012). How those clock hours are divided between basic pharmacology and clinical pharmacology was not reported. Regardless, novice PAs had difficulties with clinical pharmacology (i.e. medication selection, dosing, and therapeutic adjustments).

Instructors can enhance courses that primarily cover drug identification and classification by providing additional information concerning the practical aspects of prescribing.

Third, because PA programs are already full of course hours, other formalized training opportunities may need expansion. The options for additional formal training include: (a) PA postgraduate programs, (b) primer conferences, and (c) advanced clinical skills workshops. Postgraduate training programs help novice PAs transition from school into practice, especially in areas such as emergency medicine and surgery. The Association of Postgraduate PA Programs (APPAP) lists 49 accredited PA residency-like programs that provide specialized PA training (http://www.appap.org). Postgraduate PA training is currently optional. Only about 200 PAs (.03% of entry-level program graduates) attend and complete residency programs annually (AAPA, 2010). These programs typically last 12 to 24 months and provide a stipend of $3,000 to $4,000 per month (AAPA, 2010).

Asprey and Helms (1999) found that PA residents were highly satisfied with the extra training and perceived increases in their ability to recognize a disease and to think critically. Given these benefits, why do so few PA graduates attend a postgraduate program? Asprey, Cawley, and Hooker (2010) argue that the financial constraints and a preference for "on-the-job" training have severely limited recruitment. Furthermore, the American Academy of Physician Assistants (AAPA) has expressed concern that these programs could become mandatory and restrict "…free entry of PAs into clinical specialties and the ability of PAs to change specialties over the course of their clinical

careers" (AAPA, 2010, p. 1). In contrast to physician residency programs, sponsoring institutions fund PA postgraduate programs, not the government (Asprey, Cawley, & Hooker, 2010). These attitudinal and funding challenges must be overcome before PA postgraduate training will become common.

For those novice PAs who do not attend a postgraduate program, primer conferences and advanced skills workshops can be designed to enhance transfer of learning. Physician and PA professional organizations, such as the AMA and AAPA, can work together to create these opportunities as add-ons to established regional and national conferences. The American College of Cardiology, a physician group, offers cardiology PAs the opportunity to join their organization and access to educational opportunities, including their annual CME conference (www.acc.org). However, the material presented may be too advanced for novices. A preconference workshop, presented by physician experts, but designed for novice PAs, could be added to the national conference agendas.

During preconference workshops, experts can fill specialty knowledge gaps and present practical approaches to specialty patient care. Advanced skills labs can be provided for novice PAs who assist in surgery or perform advanced procedures. Medical device companies frequently provide such advanced skills workshops to surgeons. Including novice PAs in these opportunities could enhance teamwork in the operating room and encourage the development of transfer partnerships.

PA clinical practice. Three additional implications concern PA clinical practice. First, clinic and hospital administrators have opportunities to improve novice PA transfer

of learning. Employers should ensure novices receive formalized orientation, ongoing support, and performance feedback. Second, employers, who assign supervisory responsibility, should ensure physicians understand PA training and appropriate PA utilization. Physicians need to model the management of complex patients and provide guidance when their novice PAs encounter difficult problems. Third, employers must resist economic pressures and reduce PA productivity demands until successful integration occurs.

Some novice PAs require more supervision than they are given. Supervising physicians should involve their novice PAs in direct concurrent care long enough to allow the PA to understand practice patterns fully. Employers must ensure their novice practitioners are supported at all times. For example, large hospitals and clinic groups that hire PAs should set up periodic assessments to ensure adequate supervision is occurring. Novice PAs should be able to report lapses in supervisory support to the organization without fearing repercussions. These measures may improve transfer of learning and patient safety.

PA graduates. PA graduates should consider how to enhance their transfer of learning. A few Phase 1 participants negotiated the terms of the transition to practice. They clarified expectations concerning supervision and workloads during the employment interview. In small physician-owned practices, the PA has little recourse when their supervisor does not provide adequate supervision. Novice PAs must be assertive and avoid becoming isolated. Novice PAs should reveal their deficiencies from

the beginning and ask for additional training when needed. If their requests for help are ignored, novice PAs should not hesitate to seek employment elsewhere.

In addition, PA graduates should understand negative emotions are common during the transition to practice. Novices should learn to recognize such feelings and seek support to minimize any negative consequences. The common responses during early practice should be anticipated, including:

- anxiety related to the fear of harming patients;
- irritability and exhaustion;
- disillusionment with career choice;
- feeling overwhelmed by responsibility;
- loss of sleep due to worry;
- and, physical manifestations of stress such as nausea and headache.

Novice PAs should be encouraged to participate in self-care activities that lessen the impact of these common responses. Self-care activities can include scheduled breaks, physical exercise, proper nutrition, spiritual practice, and activities with family/peers.

Lastly, novice PAs must reserve time for self-study activities and stay up to date throughout their PA career. These new graduates must learn how to assess their learning needs and overcome any learning fatigue resulting from PA training. Novice PAs should also consider what learning is required to make a positive difference in their patients' health and welfare. If needed, new graduates should purchase their own learning resources and/or pursue additional formalized training. These implications for practice are augmented by implications for theory.

Theory

The main purpose of this study was to describe transfer of learning, not to develop a theory. However, the findings have implications related to transfer of learning models and adult experiential learning theories. First, the transfer of learning model described by Baldwin and Ford (1988), and modified by Gitonga (2007), served as a useful construct for thematic coding during Phase 1. The model provided useful descriptive language such as generalization and maintenance. The Phase 1 participants discussed the individual and environmental factors facilitating or inhibiting transfer of learning in detail. Second, the model described by Dornan et al. (2007) was useful because the process of medical students becoming doctors appears to be remarkably similar to the process of PA students becoming practicing PAs. Third, the experiential learning theories, reflection-in-action (Schön, 1983) and cognitive apprenticeship (Collins et al., 1987; Farmer et al., 1992), describe how experiences facilitate novice PA transfer of learning in different ways.

Models. It is important to note that Gitonga's (2007) model described the transfer-related factors in the CME context. CME is an activity designed to keep experienced practitioners' knowledge current. Concepts such as readiness-to-learn may differ between experienced practitioners and novices. However, the model focuses on physician transfer of learning in relation to clinical outcomes. I found the model suitable when describing aspects of novice PA transfer of learning. For instance, Gitonga (2007) considered motivation and ability as elements of a transfer-ready learner profile. The novice PA's in my study reported variations in motivation and ability. Of particular

interest was the learning fatigue reported in Phase 1. Three participants revealed the rigors of PA school left them exhausted, impairing their motivation to read. Mike, for example, did not read for the first 10 months of practice. Furthermore, some participants exhibited more self-reliance than others when solving clinical problems. These findings support the idea of an individualized transfer-ready learner profile as suggested by Gitonga. Also, Gitonga included the transfer partnership as one of the environmental factors in the model. She described transfer partnership as "…a balanced distribution of concern for and sufficient involvement of trainees, [by] their managers or supervisors and trainers" (Gitonga, 2007, p. 4). In Phase 2, seven participants were involved in transfer partnerships that facilitated their ability to apply their learned knowledge and skills in practice.

The mechanistic and linear nature of the Gitonga's (2007) model is a limitation. The model includes (a) training inputs, (b) training outputs, and (c) the conditions of transfer (Gitonga, 2007; Baldwin & Ford, 1988). I found the model's factors operated in a dynamic nonlinear way. The interplay of trainee characteristics and work environment was evident in the participant interview data. For example, intrinsic motivation allowed some novices to transfer learning despite a nonconducive environment. The basic transfer of learning model is also unidirectional (Baldwin & Ford, 1988). In contrast, the experiential-based learning model describing the progression from medical student to doctor (Dornan et al., 2007) explained the reciprocal relationship between confidence and competence.

Some participants were involved fully in the four-part process of passive observation, active observation, rehearsal, and performance (Dornan et al., 2007). However, the length of observation differed among participants. Also, some participants mentioned confidence facilitated continued transfer as Dornan et al. suggested. The Dornan et al. model seems to depict the experiences of supported novice PAs, but not unsupported novice PAs. Because the models in the conceptual framework provide incomplete representations, I considered the relationship between adult experiential learning theory and novice PA transfer of learning.

Theories. Individual and social adult experiential learning activities facilitated novice PA transfer of learning. Supported novices described experiences aligning with cognitive apprenticeship (Collins et al., 1987; Farmer et al., 1992). Many participants were afforded modeling during their first month of practice. For some, coaching and articulation coaching occurred, typically during informal case discussions. Some participants provided examples of generalization facilitated by their physicians. The physicians explained how they approach patient problems. This verbal articulation of thought process is a hallmark cognitive apprenticeship. Collins et al. (1987) explained, "In cognitive apprenticeship, one needs to deliberately bring the thinking to the surface, to make it visible" (p. 3). The participants used the term shadowing to describe the modeling that occurs in cognitive apprenticeship. This activity allowed the novices to see how tasks are performed (Collins et al., 1987). Coaching occurred when the novices were guided during their activities, often when they were reading x-rays or performing procedures. Scaffolding occurred when the physicians stepped in to take over patient

management, often when the novices initiated a consultation. Articulation occurred when the novices made their thought processes visible when presenting cases to their physicians. Reflection (comparing performance outcomes) and exploration (novices solving problems on their own) occurred when the supervising physicians granted autonomy to the novices.

As Stalmeijer et al. (2009) observed, the cognitive apprenticeship practices had variable penetrance. Some participants mentioned that the activities were often unplanned and occurred randomly when an interesting case was found. Periods of provisional practice were sometimes described as short with rapid fading of supervisory support. When this occurred the novices shifted to self-reliant transfer of learning.

Many participants aligned with the theory of reflection-in-action (Schön, 1983). These study participants formed illness scripts and improvised responses during patient care. Supported and unsupported novice PAs described reflective practices during the act of patient care. However, the unsupported PAs worked in a context that required self-reflection and self-direction. Schön's reflective process is situated in real-time clinical judgments and often forced by clinical context (Cervero, 2003). As stated by Sargeant et al. (2006), "Patients served as both stimuli for learning and sources of learning" (p.657). Schön (1983) and Phase 1 participant Mandy used the word "repertoire" to describe the set of responses developed from experience. The participants frequently used pattern recognition to make diagnoses and prior patient outcomes to make treatment decisions. Reflection-in-action was the approach used most commonly by those novices sharing the self-reliant perspective.

The findings did not align with nonreflective practice (Jarvis, 1987). Jarvis (1987) argued nonreflective practices arise when support and feedback are lacking. The best example of nonreflective practice was Morgan's habit of asking the clinic nurses for treatment advice based on their knowledge of her physicians' routines. However, most participants did not reveal habitual nonreflective practice. Nonreflective practice may develop over time; therefore, novice PAs may be too new to the profession to exhibit such habitual patterns.

No single theory accounts for the differing novice perspectives identified in this study. The current models have limited utility for researchers working within a constructivist paradigm. In addition, adult experiential learning only facilitates transfer of learning. Overall the study's conceptual framework helped guide the inquiry by providing the necessary descriptive language and by contrasting the individual and social processes by which transfer of learning occurs. In addition to the implications for theory, the study has implications for future research.

Future Research

This study was the first to describe novice PA transfer of learning by combining two interpretive methodologies. The findings have implications for future research.

First, I demonstrated how Q methodology enhances multicase study. Researchers in different fields may use this design in other interpretive studies. In Phase 1, the participants were able to share their individual perspectives, allowing multiple truths to be revealed. Because individuals often share constructions of reality due to similar views or beliefs (Lincoln & Guba, 2013) a further examination of such shared

realities can be informative. In Phase 2, the similarities and differences between the various perspectives were explored, adding a different way to make meaning from the social constructions.

Second, the Q set from this study can be used to expand the investigation of novice PA learning. Additional perspectives on novice PA transfer of learning can be obtained from supervising physicians, clinic administrators, and PA educators. These individuals train and guide novice PAs and may have unique perspectives that differ from those described by the novices themselves. Their insights may broaden our understanding of the phenomenon. Investigators can also modify the Q portion of the study by combining sorts from residents, NPs, and PAs to determine if the structure of the concourse changes.

Third, the findings raise additional questions about transfer of learning that must be answered using other methodologies?

- How much of the information taught in PA school is irrelevant to PA practice?
- What are the measurable differences in practice between novices with prior healthcare experience and novices without healthcare experience?
- What are the perceptible differences in practice between PAs who complete residency programs and PAs with the equivalent amount of informal workplace learning?
- What is the influence of part-time practice on PA knowledge and skill maintenance?

Fourth, many of the novice PAs in this study changed jobs during the first two years of practice. Therefore, investigators should study the influence of variables, such as shadowing duration and initial workload, on the novice PA job change. Research into PA practice is still lacking. Additional quantitative and qualitative studies are needed to inform educators, employers, and policymakers.

Conclusion

This mixed interpretive study described novice PA transfer of learning based on the perceptions of 25 participants. The dissertation was divided into five chapters including an introduction, a literature review, the methodology, the findings, as well as the summary, discussion, and conclusion. In Chapter I, I provided background information about PA training and practice to contextualize the research problem and purpose. In Chapter II, I proposed ways novice PAs transfer learning from PA school to practice based on the study's conceptual framework. I also reviewed differing, and sometimes incomplete, descriptions of novice clinician learning from the literature. In Chapter III, I described the methodologies and methods used in the investigation. In Chapter IV, I documented the research findings and showed how some novice PAs find transfer of learning to be more challenging than others. This difference was not based on specialty, but rather differing combinations of facilitating and inhibiting factors. The seven major themes were: (a) direct transfer, (b) transfer failure, (c) indirect transfer, (d) individual transfer facilitators, (e) work environmental transfer facilitators, (f) individual transfer inhibitors, and (g) work environmental transfer inhibitors. The three factors

(shared social perspectives) were: (1) transfer partnership, (2) self-reliant, and (3) insecure. I discussed the implications of these findings in Chapter V.

Novice PAs, who participated in the study, were either supported or unsupported during their transition to practice. Supported novices were typically involved in an apprentice relationship with their supervising physician. Some unsupported novice PAs were self-reliant and transferred learning by engaging in reflective practices and self-directed learning. Other unsupported novices PAs were thwarted by negative emotions and had difficulty transferring learning from school to practice. I encourage PA educators, physicians, policymakers, and researchers to reflect on these findings in an effort to improve transfer of learning for future novice PAs.

REFERENCES

American Academy of Physician Assistants. (2010) *Maintaining professional flexibility: Issues related to accreditation of postgraduate physician assistant programs*. Retrieved February 3, 2015, Retrieved from https://www.aapa.org

Akhtar-Danesh, N., Baumann, A., & Cordingley, L. (2008). Q-methodology in nursing research: A promising method for the study of subjectivity. *Western Journal of Nursing Research, 30*(6), 759-773. doi:10.1177/0193945907312979

American Medical Association. (2015). Requirements for becoming a physician. Retrieved February 3, 2015, Retrieved from http://www.ama-assn.org/ama/pub/education-careers/becoming-physician.page

ARC-PA. (2010). Accreditation standards for physician assistant education: Fourth edition. Retrieved February 3, 2015, Retrieved from http://www.arc-pa.org/documents/Standards4theditionwithclarifyignchanges10.2011fnl.pdf

ARC-PA. (2015). Accredited programs. Retrieved February 3, 2015, Retrieved from http://www.arc-pa.org/acc_programs/

Asprey, D. P., Cawley, J. P., & Hooker, R. S. (2010). Postgraduate physician assistant programs. In R. S. Hooker, J. F. Cawley, & D. P. Asprey (Eds.), *Physician assistants: Policy and practice* (pp. 145-163). Philadelphia, PA: F. A. Davis Company.

Asprey, D. P., & Helms, L. (2000). A description of physician assistant postgraduate residency training: The resident's perspective. *Perspective on Physician Assistant Education 11*(2), 79-86.

Baldwin, T. T., & Ford, J. K. (1988). Transfer of training: A review and directions for future research. *Personnel Psychology, 41*(1), 63-105. doi:10.1111/j.1744-6570.1988.tb00632.x

Barbiero, D. (2004). Dictionary of philosophy of mind. Retrieved February 25, 2014, Retrieved from https://sites.google.com/site/minddict/knowledge-tacit

Baxter, P., Akhtar-Danesh, N., Valaitis, R., Stanyon, W., & Sproul, S. (2009). Simulated experiences: Nursing students share their perspectives. *Nurse Education Today, 29*(8), 859-866. doi:10.1016/j.nedt.2009.05.003

Booth, A., Papaioannou, D., & Sutton, A. (2012). *Systematic approaches to a successful literature review*. Los Angeles, CA: Sage Publications.

Brown, S. R. (1980). *Political subjectivity: Applications of Q methodology in political science*. New Haven, CT: Yale University Press.

Brown, S. R. (2004). Q methodology. In M. S. Lewis-Beck, A. Bryman & T. F. Liao (Eds.), *The Sage encyclopedia of social science research methods* (pp. 888-889). Thousand Oaks, CA: Sage Publications. doi:10.4135/9781412950589.n776

Brown, S. R. (2008). Q methodology. In L. M. Given (Ed.), *The Sage encyclopedia of qualitative research methods* (pp. 700-703). Thousand Oaks, CA: Sage Publications. doi:10.4135/9781412963909.n350

Brown, S. R., & Good, J. (2010). Q methodology. In Neil J. Salkind (Ed.), *Encyclopedia of research design* (pp. 1149-1156). Thousand Oaks, CA: Sage Publications. doi:10.4135/9781412961288

Brown, J., Chapman, T., & Graham, D. (2007). Becoming a new doctor: A learning or survival exercise? *Medical Education, 41*(7), 653-660. doi:10.1111/j.1365-2923.2007.02785.x

Bureau of Labor Statistics. (2014). *Occupational outlook handbook*. (No. 2014-2015). U.S. Department of Labor.

Carlson, R. W., Dubaybo, B. A., & Samson, M. K. (1991), The role of physician-assistants in critical care units. *Chest, 99*, 89-91. Retrieved February 23, 2014, Retrieved from http://go.galegroup.com/ps/i.do?id=GALE%7CA10489371&v=2.1&u=txshracd2898&it=r&p=HRCA&sw=w&asid=ba8ab534b007f506b5b2bcbebeddbb72

Carzoli, R. P., Martinez-Cruz, M., Cuevas, L. L., Murphy, S., & Chiu, T. (1994). Comparison of neonatal nurse practitioners, physician assistants, and residents in the neonatal intensive-care unit. *Archives of Pediatrics & Adolescent Medicine, 148*(12), 1271-1276. doi:10.1001/archpedi.1994.02170120033005

Cattell, R. B. (1966). The scree test for the number of factors. *Multivariate Behavioral Research, 1*(2), 245-276. doi:10.1207/s15327906mbr0102_10

Caulley, L., Wadey, V., & Freeman, R. (2012). Learning styles of first-year orthopedic surgical residents at 1 accredited institution. *Journal of Surgical Education, 69*(2), 196-200. doi:10.1016/j.jsurg.2011.09.002

Cawley, J. F., Hooker, R. S., & Asprey, D. P. (2010a). Development of the profession. In R. S. Hooker, J. F. Cawley & D. P. Asprey (Eds.), *Physician assistants: Policy and practice* (3rd ed., pp. 17-61). Philadelphia, PA: F. A. Davis Company.

Cawley, J. F., Hooker, R. S., & Asprey, D. P. (2010b). Physician assistants in primary care. In J. F. Cawley, R. S. Hooker & D. P. Asprey (Eds.), *Physician assistants: Policy and practice* (3rd ed., pp. 17-61). Philadelphia, PA: F. A. Davis Company.

Cervero, R. M. (2003). Place matters in physician practice and learning. *Journal of Continuing Education in the Health Professions*, *23*, S10-S18. doi:10.1002/chp.1340230405

Choudhry, N. K., Fletcher, R. H., & Soumerai, S. B. (2005). Systematic review: The relationship between clinical experience and quality of health care. *Annals of Internal Medicine, 142*(4), 260-273. doi:10.7326/0003-4819-142-4-200502150-00008

Christmas, A. B., Reynolds, J., Hodges, S., Franklin, G. A., Miller, F. B., Richardson, J. D., & Rodriguez, J. L. (2005). Physician extenders impact trauma systems. *Journal of Trauma - Injury, Infection, and Critical Care, 58*(5), 917-920. doi:10.1097/01.TA.0000162736.06947.E3

Collins, A., Brown, J. S., & Newman, S. E. (1987). *Cognitive apprenticeship: Teaching the craft of reading, writing, and mathematics*. (No. 403). Chicago, IL: University of Illinois at Urbana Champaign.

Collins, A., Brown, J. S., & Holum, A. (1991). Cognitive apprenticeship: Making things visible. *American Educator: The Professional Journal of the American Federation of Teachers, 15*(3), 6-11. Retrieved March 10, 2014, Retrieved from http://elc.fhda.edu/transform/resources/collins_brown_holum_1991.pdf

Conn, J. J., Dodds, A. E., & Colman, P. G. (2003). The transition from knowing to doing: Teaching junior doctors how to use insulin in the management of diabetes mellitus. *Medical Education, 37*(8), 689-694. doi:10.1046/j.1365-2923.2003.01582.x

Cooper, R. A. (2007). New directions for nurse practitioners and physician assistants in the era of physician shortages. *Academic Medicine, 82*(9), 827-828. doi:10.1097/ACM.0b013e31812f7939

Creswell, J. W. (2012). *Educational research: Planning, conducting, and evaluating quantitative and qualitative research* (4th ed.). Boston, MA: Pearson Education.

Cusson, R. M., & Strange, S. N. (2008). Neonatal nurse practitioner role transition: The process of reattaining expert status. *Journal of Perinatal & Neonatal Nursing, 22*(4), 329-337. doi:10.1097/01.JPN.0000341365.60693.39

D'agostino, R. B., & Russell, H. K. (2005). Centroid method. In P. Armitage, & T. Colton (Eds.), *Encyclopedia of biostatistics* (1st ed.). Hoboken, NJ: John Wiley and Sons. doi:10.1002/0470011815.b2a13006

de Camargo, K. (2002). The thought style of physicians: Strategies for keeping up with medical knowledge. *Social Studies of Science, 32*(5-6), 827-855. doi:10.1177/030631270203200501

Dennis, K. E. (1986). Q methodology: Relevance and application to nursing research. *Advances in Nursing Science, 8*(3), 6-17. doi:10.1097/00012272-198604000-00003

Dhuper, S. C., S. (2008). Replacing an academic internal medicine residency program with a physician assistant--hospitalist model: A comparative analysis study. *American Journal of Medical Quality, 24*(2), 132-139. doi:10.1177/1062860608329646

Dinno, A. (2009). Implementing horn's parallel analysis for principal component analysis and factor analysis. *Stata Journal, 9*(2), 291-298.

Dornan, T., Boshuizen, H., King, N., & Scherpbier, A. (2007). Experience-based learning: A model linking the processes and outcomes of medical students'

workplace learning. *Medical Education, 41*(1), 84-91. doi:10.1111/j.1365-2929.2006.02652.x

Douven, I. (2011). Pierce on abduction. In E. Zalta (Ed.), *Stanford encyclopedia of philosophy* (Spring 2011 ed.). Stanford, CA: Stanford University.

Dyess, S.M., & Sherman, R.O. (2009). The first year of practice: New graduate nurses' transition and learning needs. *The Journal of Continuing Education in Nursing, 40*(9), 403-410. doi:10.3928/00220124-20090824-03

Duchscher, J.B. (2008). A process of becoming: The stages of new nursing graduate professional role transition. *The Journal of Continuing Education in Nursing, 39*(10), 441-450.

Elias, J.L., & Merriam, S.B. (2005). *Philosophical foundations of adult education* (3rd ed.). Malabar, Fl.: Kriegar Pub.

Ericsson, K. (2004). Deliberate practice and the acquisition and maintenance of expert performance in medicine and related domains. *Academic Medicine, 79*(10), S70-S81. doi:10.1097/00001888-200410001-00022

Erlandson, D. A., Harris, E. L., Skipper, B. L., & Allen, S. D. (1993). *Doing naturalistic inquiry*. Newbury Park, CA: Sage Publications.

Farmer, J., Buckmaster, A., & LeGrand, B. (1992). Cognitive apprenticeship: Implications for continuing professional education. *New Directions for Adult and Continuing Education, 55*, 41-49. doi:10.1002/ace.36719925506

Farnan, J. M., Johnson, J. K., Meltzer, D. O., Humphrey, H. J., & Arora, V. M. (2008). Resident uncertainty in clinical decision making and impact on patient care: A qualitative study. *Quality & Safety in Health Care, 17*(2), 122-126. doi:10.1136/qshc.2007.023184

Fenwick, T. J. (2000). Expanding conceptions of experiential learning: A review of the five contemporary perspectives on cognition. *Adult Education Quarterly, 50*(4), 243. doi:10.1177/07417130022087035

Fleming, E., & Carberry, M. (2011). Steering a course towards advanced nurse practitioner: A critical care perspective. *Nursing in Critical Care, 16*(2), 67-76. doi:10.1111/j.1478-5153.2011.00448.x

Foley, J. M., & Kaiser, L. M. (2013). Learning transfer and its intentionality in adult education and continuing education. *New Directions for Adult and Continuing Education, 137*, 5-15. doi:10.1002/ace.20040

Ford, J. K., & Weissbein, D. A. (1997). Transfer of training: An updated review and analysis. *Performance Improvement Quarterly, 10*(2), 22-41. doi:10.1111/j.1937-8327.1997.tb00047.x

Furman, N., & Sibthorp, J. (2013). Leveraging experiential learning techniques for transfer. *New Directions for Adult and Continuing Education, 137*, 17-26. doi:10.1002/ace.20041

Ginde, A. A., & Camargo Jr., C. A. (2010). Trends in midlevel provider utilization. *Academic Emergency Medicine, 17*(3), 344. doi:10.1111/j.1553-2712.2010.00686.x

Gitonga, J. W. (2007). Transfer of learning in continuing medical education (CME): A conceptual model. Paper presented at the *International Research Conference in the Americas of the Academy of Human Resource Development,* Indianapolis, IN. 1-8. Retrieved February 23, 2014, Retrieved from http://files.eric.ed.gov/fulltext/ED504737.pdf

Glicken, A. D. (2014). Physician assistant profile tool provides comprehensive new source of PA workforce data. *Journal of the American Academy of Physician Assistants, 27*(2), 47-49. doi:10.1097/01.JAA.0000442708.26094.02

Glicken, A. D., & Miller, A. A. (2013). Physician assistants: From pipeline to practice. *Academic Medicine, 88*(12), 1883-1889. doi:10.1097/ACM.0000000000000009

Goodson, P. G. (2010). *Theory in health promotion research and practice: Thinking outside the box*. Sudbury, MA: Jones and Bartlett.

Guest, G., Bunce, A., & Johnson, L. (2006). How many interviews are enough?: An experiment with data saturation and variability. *Field Methods, 18*(1), 59-82. doi:10.1177/1525822X05279903

Guttman, L. (1954). Some necessary conditions for common- factor analysis. *Psychometrika, 19*(2), 149-161. doi:10.1007/BF02289162

Halter, M., Drennan, V., Chattopadhyay, K., Carneiro, W., Yiallouros, J., de Lusignan, S., . . . Grant, R. (2013). The contribution of physician assistants in primary care: A systematic review. *BMC Health Services Research, 13*(1), 223. doi:10.1186/1472-6963-13-223

Heitz, L. J., Steiner, S. H., & Burman, M. E. (2004). RN to FNP: A qualitative study of role transition. *Journal of Nursing Education, 43*(9), 416-420.

Hocking, J., Crowley, D., & Cawley, J. F. (2013). Physician assistant education: An analysis of the Journal of Physician Assistant Education. *The Journal of Physician Assistant Education, 24*(2), 6-11. Retrieved February 22, 2014, Retrieved from http://www.paeaonline.org/index.php?ht=a/GetDocumentAction/i/150492

Høifødt, T. S., Talseth, A. G., & Olstad, R. (2007). A qualitative study of the learning processes in young physicians treating suicidal patients: From insecurity to personal pattern knowledge and self-confidence. *BMC Medical Education, 7*, 21. doi:10.1186/1472-6920-7-21

Hooker, R. S., Cawley, J. F., & Asprey, D. P. (2010a). Current status: A profile of the physician assistant profession. In R. S. Hooker, J. F. Cawley & D. P. Asprey (Eds.), *Physician assistants: Policy and practice* (3rd ed., pp. 62-100). Philadelphia, PA: F. A. Davis Company.

Hooker, R. S., Cawley, J. F., & Asprey, D. P. (2010b). Economic assessment of physician assistants. In R. S. Hooker, J. F. Cawley & D. P. Asprey (Eds.), *Physician assistants: Policy and practice* (3rd ed., pp. 341-372). Philadelphia, PA: F. A. Davis Company.

Hooker, R. S., Cawley, J. F., & Asprey, D. P. (2010c). Introduction and overview of the profession. In R. S. Hooker, J. F. Cawley & D. P. Asprey (Eds.), *Physician assistants: Policy and practice* (3rd ed., pp. 1-16). Philadelphia, PA: F. A. Davis Company.

Horn, J. L. (1965). A rationale and test for the number of factors in factor analysis. *Psychometrika, 30*(2), 179.

Irby, D. M. (1995). Teaching and learning in ambulatory care settings: A thematic review of the literature. *Academic Medicine, 70*(10), 898-931.

Jacobson, P., & Jazowski, S. (2011). Physicians, the Affordable Care Act, and primary care: Disruptive change or business as usual? *Journal of General Internal Medicine, 26*(8), 934-937. doi:10.1007/s11606-011-1695-8

Jarvis, P. (1987). Meaningful and meaningless experience: Towards an analysis of learning from life. *Adult Education Quarterly, 37*(3), 164-172. doi:10.1177/0001848187037003004

Jarvis, P. (1992). Quality in practice: The role of education. *Nurse Education Today, 12*(1), 3-10. doi:10.1016/0260-6917(92)90003-7

Johnson, R.B., & Onwuegbuzie, A.J. (2004). Mixed methods research: A research paradigm whose time has come. *Educational Researcher, 33*(7), 14-16.

Kaiser, H. F. (1960). The application of electronic computers to factor analysis. *Educational and Psychological Measurement, 20*(1), 141-151. doi:10.1177/001316446002000116

Kelly, N. R., & Mathews, M. (2001). The transition to first position as nurse practitioner. *Journal of Nursing Education, 40*(4), 156-162.

Kennedy, T. J. T., Lingard, L., Baker, G. R., Kitchen, L., & Regehr, G. (2007). Clinical oversight: Conceptualizing the relationship between supervision and safety. *Journal of General Internal Medicine, 22*(8), 1080-1085. doi:10.1007/s11606-007-0179-3

Kilminster, S., Zukas, M., Quinton, N., & Roberts, T. (2011). Preparedness is not enough: Understanding transitions as critically intensive learning periods. *Medical Education, 45*(10), 1006-1015. doi:10.1111/j.1365-2923.2011.04048.x

Leberman, S., McDonald, L., & Doyle, S., (2006). *The transfer of learning: Participants' perspectives of adult education and training*. Burlington, VT: Gower.

Leech, N. L., & Onwuegbuzie, A. J. (2010). A typology of mixed methods research designs. *Quality & Quantity, 43*, 265-275. doi:10.1007/s11135-009-9241-z

Legassie, J., Zibrowski, E. M., & Goldszmidt, M. A. (2008). Measuring resident well-being: Impostorism and burnout syndrome in residency. *Journal of General Internal Medicine, 23*(7), 1090-1094. doi:10.1007/s11606-008-0536-x

Li, S. T., Favreau, M. A., & West, D. C. (2009). Pediatric resident and faculty attitudes toward self-assessment and self-directed learning: A cross-sectional study. *BMC Medical Education, 9,* 16. doi:10.1186/1472-6920-9-16

Lincoln, Y. S., & Guba, E. G. (1985). *Naturalistic inquiry*. Newbury Park, CA: Sage Publications.

Lincoln, Y. S., & Guba, E. G. (2013). *The constructivist credo*. Walnut Creek, CA: Left Coast Press, Inc.

Lohr, R. H., West, C. P., Beliveau, M., Daniels, P. R., Nyman, M. A., Mundell, W. C., . . . Beckman, T. J. (2013). Comparison of the quality of patient referrals from physicians, physician assistants, and nurse practitioners. *Mayo Clinic Proceedings, 88*(11), 1266-1271. doi:10.1016/j.mayocp.2013.08.013

Lyss-Lerman, P., Teherani, A., Aagaard, E., Loeser, H., Cooke, M., & Harper, G. M. (2009). What training is needed in the fourth year of medical school? Views of residency program directors. *Academic Medicine, 84*(7), 823-829. doi:10.1097/ACM.0b013e3181a82426

Malhotra, A., Gregory, I., Darvill, E., Goble, E., Pryce-Roberts, A., Lundberg, K., . . . Hafstad, H. (2009). Mind the gap: Learners' perspectives on what they learn in communication compared to how they and others behave in the real world. *Patient Education & Counseling, 76*(3), 385-390. doi:10.1016/j.pec.2009.07.024

Marincic, P. Z., & Ludwig, D. B. (2011). Physician assistant self-assessment of entry-level competency: A comparison with observations of supervising physicians. *Journal of Physician Assistant Education, 22*(4), 23-33. Retrieved October 7, 2013, Retrieved from http://www.paeaonline.org/index.php?ht=a/GetDocumentAction/i/133336

Matheson, C. B., Matheson, D. J., Saunders, J. H., & Howarth, C. (2010). The views of doctors in their first year of medical practice on the lasting impact of a preparation for house officer course they undertook as final year medical students. *BMC Medical Education, 10*(1), 48. doi:10.1186/1472-6920-10-48

McKeown, B., & Thomas, D. B. (2013). *Q methodology* (2nd ed.). Thousand Oaks, CA: Sage Publications.

McLean, T. R. (2011). The schizophrenia of physician extender utilization. *Annals of Health Law, 20*(2), 205-251.

MediMedia. (2012, NPs & PAs--top hiring priority for medical groups. *Managed Care, 21*, 55. Retrieved October 7, 2013, Retrieved from http://www.managedcaremag.com/archives/1204/1204.outlook.html

Merriam, S. B. (2009). *Qualitative research: A guide to design and implementation* (2nd ed.). San Francisco, CA: Jossey-Bass.

Meyers, L. S., Gamst, G., & Guarino, A. J. (2013). *Applied multivariate research: Design and interpretation*. Thousand Oaks, CA: Sage Publications.

Miller, W., Riehl, E., Napier, M., Barber, K., & Dabideen, H. (1998). Use of physician assistants as surgery/trauma house staff at an American college of surgeons-verified level II trauma center. *The Journal of Trauma: Injury, Infection, and Critical Care, 44*(2), 372-376.

Moote, M., Krsek, C., Kleinpell, R., & Todd, B. (2011). Physician assistant and nurse practitioner utilization in academic medical centers. *American Journal of Medical Quality, 26*(6), 452-460. doi:10.1177/1062860611402984

Moses, R. E., & Feld, A. D. (2007). Physician liability for medical errors of nonphysician clinicians: Nurse practitioners and physician assistants. *American Journal of Gastroenterology, 102*(1), 6-9. doi:10.1111/j.1572-0241.2006.00804.x

Naumes, W., & Naumes, M. J. (2011). *Art and craft of case writing* (3rd ed.). Armonk, NY: M.E. Sharpe, Inc.

NCCPA. (2014a). NCCPA survey shows no. 1 consumer concern: Access to good affordable health care. Retrieved March 6, 2014, Retrieved from http://www.nccpa.net/Upload/PDFs/Press%20Release%20-%20Consumer%20Survey%20Results.pdf

NCCPA. (2014b). Specialty certificates of added qualifications. Retrieved March, 06, 2014, Retrieved from http://www.nccpa.net/SpecialtyCAQs

Nickle, P. (2007). Cognitive apprenticeship: Laying the groundwork for mentoring registered nurses in the intensive care unit. *Dynamics, 18*(4), 19-27.

Norman, G. (2005). Research in clinical reasoning: Past history and current trends. *Medical Education, 39*(4), 418-427. doi:10.1111/j.1365-2929.2005.02127.x

Ochsmann, E. B., Zier, U., Drexler, H., & Schmid, K. (2011). Well prepared for work? Junior doctors' self-assessment after medical education. *BMC Medical Education, 11*(99), 1-9. Retrieved October 3, 2013, Retrieved from http://www.biomedcentral.com/1472-6920/11/99

Okie, S. (2008). Innovation in primary care — staying one step ahead of burnout. *New England Journal of Medicine, 359*(22), 2305-2309. doi:10.1056/NEJMp0805759

O'Neill, P. A., Jones, A., Willis, S. C., & McArdle, P. J. (2003). Does a new undergraduate curriculum based on tomorrow's doctors prepare house officers better for their first post? A qualitative study of the views of pre-registration house officers using critical incidents. *Medical Education, 37*(12), 1100-1108. doi:10.1046/j.1365-2923.2003.01714.x

Onwuegbuzie, A. J., & Collins, K. M. T. (2007). A typology of mixed methods sampling designs in social science research. *The Qualitative Report, 12*(2), 281-316.

Onwuegbuzie, A. J., & Leech, N. L. (2007). A call for qualitative power analysis. *Quality and Quantity, 41*, 105-121. doi:10.1007/s11135-005-1098-1

Perry III, H. B. (1978). The job satisfaction of physician assistants: A causal analysis. *Social Science and Medicine, 12*(5), 377-385.

Physician Assistant Education Association. (2013). *Twenty-seventh annual report on physician assistant education programs in the United States*. (No. ISBN 9780615819709).PAEA. Retrieved April 15, 2014, Retrieved from http://www.paeaonline.org/index.php?ht=a/GetDocumentAction/i/149930

Physician Assistant Education Association. (2014a). *Twenty-eighth annual report on physician assistant education programs in the United States, 2011-2012*. (No. ISBN 9780615984223). Retrieved February 2, 2015, Retrieved from http://www.paeaonline.org/index.php?ht=a/GetDocumentAction/i/156969

Physician Assistant Education Association. (2014b). *Matriculating student survey 2013*. (Issue Brief). Retrieved February 2, 2015, Retrieved from http://www.paeaonline.org/index.php?ht=a/GetDocumentAction/i/156635

Polansky, M. (2011). Strategies for workplace learning used by entry-level physician assistants. *Journal of Physician Assistant Education, 22*(3), 43-50. Retrieved October 7, 2013, Retrieved from http://www.paeaonline.org/index.php?ht=a/GetDocumentAction/i/25277

Prata, J., & Gietzen, J. W. (2007). Imposter phenomenon in physician assistant education. *Journal of the American Academy of Physician Assistants, 20*(7), 32-33. doi:10.1097/01720610-200707000-00047

Pratt, D. D., Arseneau, R., & Collins, J. B. (2001). Reconsidering "good teaching" across the continuum of medical education. *Journal of Continuing Education in the Health Professions, 21*(2), 70-81. doi:10.1002/chp.1340210203

Prince, K., Van de Wiel, M., Van der Vleuten, C., Boshuizen, H., & Scherpbier, A. (2004). Junior doctors' opinions about the transition from medical school to clinical practice: A change of environment. *Education for Health, 17*(3), 323-331. doi:10.1080/13576280400002510

QSR International. (2014). Nvivo10 help: About nodes. Retrieved May 10, 2014, Retrieved from http://help-nv10.qsrinternational.com/desktop/concepts/about_nodes.htm

Rich, E. R., Jorden, M. E., & Taylor, C. J. (2001). Assessing successful entry into nurse practitioner practice: A literature review. *Journal of the New York State Nurses Association, 32*(2), 14-18.

Rodriguez-Paz, J., Kennedy, M., Salas, E., Wu, A. W., Sexton, J. B., Hunt, E. A., & Pronovost, P. J. (2009). Beyond "see one, do one, teach one": Toward a different training paradigm. *Postgraduate Medical Journal, 85*(2009), 244-249. doi:10.1136/qshc.2007.023903

Ronnestad, M., & Skovholt, T. M. (2012). *The developing practitioner: Growth and stagnation of therapists and counselors*. Hoboken, NJ: Taylor and Francis.

Rosenzweig, M., Giblin, J., Mickle, M., Morse, A., Sheehy, P., & Sommer, V. (2012). Bridging the gap: A descriptive study of knowledge and skill needs in the first year of oncology nurse practitioner practice. *Oncology Nursing Forum, 39*(2), 195-201.

Royer, J. (1979). Theories of the transfer of learning. *Educational Psychologist, 14*(1), 53-69.

Sagasser, M. H., Kramer, A. W. M., & Van Der Vleuten, C. P. M. (2012). How do postgraduate GP trainees regulate their learning and what helps and hinders them? A qualitative study. *BMC Medical Education, 12*(1), 67. Retrieved September 27, 2013, Retrieved from http://www.biomedcentral.com/1472-6920/12/67

Salomon, G., & Perkins, D. N. (1998). Individual and social aspects of learning. *Review of Research in Education, 23*, 1-24.

Salomon, G., & Perkins, D. N. (1989). Rocky roads to transfer: Rethinking mechanism of a neglected phenomenon. *Educational Psychologist, 24*(2), 113-142. doi:10.1207/s15326985ep2402_1

Sargeant, J., Mann, K., Sinclair, D., Ferrier, S., Muirhead, P., van der Vleuten, C., & Metsemakers, J. (2006), Learning in practice: Experiences and perceptions of high-scoring physicians. *Academic Medicine*, *81*(7), 665-660.

Schmolck, P. (2014). *PQMethod* (Version 2.35) [Computer software]. Retrieved February 25, 2014, Retrieved from http://schmolck.userweb.mwn.de/qmethod/downpqmac.htm

Schön, D. A. (1983). *The reflective practitioner: How professionals think in action*. New York, NY: Basic Books.

Schwandt, T. A. (2007). *The SAGE dictionary of qualitative inquiry*. Thousand Oaks, CA: Sage Publications.

Schwartz-Shea, P., & Yanow, D. (2012). *Routledge series on interpretive methods: Interpretive approaches to research design*. Florence, KY: Routledge.

Scott, C., Bouchard, G., Brock, D., Davison, M., Dehn, R., Hegmann, T., . . . Niebuhr, B. (2012). *Physician Assistant Education Association 2010 curriculum survey*.

Retrieved February 23, 2014, Retrieved from http://www.paeaonline.org/index.php?ht=a/GetDocumentAction/i/140155

Sheehan, D., Wilkinson, T. J., & Bowie, E. (2012). Becoming a practitioner: Workplace learning during the junior doctor's first year. *Medical Teacher, 34*(11), 936-945. doi:10.3109/0142159X.2012.717184

Slotnick, H.B. (1999). How doctors learn: Physicians' self-directed learning episodes. *Academic Medicine, 74*(10), 1106-1117.

Spouse, J. (2001). Bridging theory and practice in the supervisory relationship: A sociocultural perspective. *Journal of Advanced Nursing, 33*(4), 512-522. doi:10.1046/j.1365-2648.2001.01683.x

Stalmeijer, R. E., Dolmans, D. H. J. M., Wolfhagen, I. H. A. P., & Scherpbier, A. J. J. A. (2009). Cognitive apprenticeship in clinical practice: Can it stimulate learning in the opinion of students? *Advances in Health Sciences Education, 14*(4), 535-546. doi:10.1007/s10459-008-9136-0

StataCorp. (2011). *Stata statistical software* (Version 12) [Computer software]. College Station, TX: StataCorp LP.

Stephenson, W. (1953). *The study of behavior; Q-technique and its methodology*. Chicago, IL: University of Chicago Press.

Sullivan-Bentz, M., Humbert, J., Cragg, B., Legault, F., Laflamme, C., Bailey, P. H., & Doucette, S. (2010). Supporting primary health care nurse practitioners' transition to practice. *Canadian Family Physician Medecin De Famille Canadien, 56*(11), 1176-1182.

Teunissen, P. W., Scheele, F., Scherpbier, a. J. J. A., Van Der Vleuten, C. P. M., Boor, K., Van Luijk, S. J., & Van Diemen-Steenvoorde, J. a. a. M. (2007). How residents learn: Qualitative evidence for the pivotal role of clinical activities. *Medical Education, 41*(8), 763-770. doi:10.1111/j.1365-2923.2007.02778.x

Teunissen, P. W., & Westerman, M. (2011). Opportunity or threat: The ambiguity of the consequences of transitions in medical education. *Medical Education, 45*(1), 51-59. doi:10.1111/j.1365-2923.2010.03755.x

The Physicians' Foundation. (2012). *A survey of America's physicians: Practice patterns and perspectives*. Retrieved February 19, 2014, Retrieved from http://www.physiciansfoundation.org/uploads/default/Physicians_Foundation_2012_Biennial_Survey.pdf

Trout, A. T., Wang, P. I., Cohan, R. H., Bailey, J. E., Khalatbari, S., Myles, J. D., & Dunnick, N. R. (2011). Apprenticeships ease the transition to independent call: An evaluation of anxiety and confidence among junior radiology residents. *Academic Radiology, 18*(9), 1186-1194. doi:10.1016/j.acra.2011.04.015

Valenta, A. L., & Wigger, U. (1997). Q-methodology: Definition and application in health care informatics. *Journal of the American Medical Informatics Association, 4*(6), 501. doi:10.1136/jamia.1997.0040501

Vogt, W. P. (2005). *Dictionary of statistics and methodology: A nontechnical guide for the social sciences* (3rd ed.). Thousand Oaks, CA: Sage Publications.

Watts, S., & Stenner, P. (2012). *Doing Q methodological research: Theory, method and interpretation*. Thousand Oaks, CA: Sage Publications.

Webler, T., Danielson, S. & Tuler, S. (2009). Using Q method to reveal social perspectives in environmental research. Retrieved May 12, 2014, Retrieved from www.seri-us.org/sites/default/files/Qprimer.pdf

Weitzman, E. A. (2000). Software and qualitative research. In N. K. Denzin, & Y. S. Lincoln (Eds.), *Handbook of qualitative research* (2nd ed., pp. 803-820). Thousand Oaks, CA: Sage Publications.

Westerman, M., Teunissen, P. W., Van Der Vleuten, C. P. M., Scherpbier, A. J. J. A., Siegert, C. E. H., Van Der Lee, N., & Scheele, F. (2010). Understanding the transition from resident to attending physician: A transdisciplinary, qualitative study. *Academic Medicine, 85*(12), 1914-1919. doi:10.1097/ACM.0b013e3181fa2913

Whittemore, R., Chase, S. K., & Mandel, C. L. (2001). Validity in qualitative research. *Qualitative Health Research, 11*(4), 522-37.

Wilkinson, T. J., & Harris, P. (2002). The transition out of medical school - a qualitative study of descriptions of borderline trainee interns. *Medical Education, 36*(5), 466-471. doi:10.1046/j.1365-2923.2002.01209.x

Yin, R. K. (2014). *Case study research* (5th ed.). Thousand Oaks, CA: Sage Publications.

APPENDIX A

RECRUITMENT EMAIL

Email wording for PA program directors:

Dear (Name of Program Director),
Greetings, my name is Glenn Forister, PA-C. I am a doctoral student in Education and Human Resource Development at Texas A&M University. For my dissertation, I am studying the topic of novice PA transfer of learning during the transition to clinic.

I am asking for your help in recruiting participants for my study. I need to identify program graduates who have been practicing clinically between 12 and 28 months. Because, these individuals are graduates and not current students, you will not be violating the Family Educational Rights and Privacy Act (FERPA) by providing me their contact information including name, e-mail address, and/or phone number.

If your institution does not allow you to share directory information about graduates without their consent, then I ask you to consider forwarding an e-mail I have drafted to solicit study participation. Interested graduates may contact me directly and need not reveal their intent to participate to you or your staff.

The Institutional Review Board of Texas A&M University has approved my study. It is regulated by the university's Human Subjects Protection Program Office and poses minimal risks not greater than the risks encountered in daily life.

I sincerely appreciate any assistance you are willing and able to provide in recruiting participants. Please do not hesitate to contact me with any questions concerning the study.

Sincerely,

Glenn Forister, PA-C
PhD Student Texas A&M
name@tamu.edu
(xxx) xxx-xxxx

Email wording for potential participants:

Dear Fellow PA [or Name if Provided]

Greetings, my name is Glenn Forister, PA-C. I am a doctoral student in Education and Human Resource Development at Texas A&M University. For my dissertation, I am studying the topic of novice PA transfer of learning during the transition to clinic.

IRB NUMBER: IRB2014-0393D
IRB APPROVAL DATE: 07/08/2014
IRB EXPIRATION DATE: 07/01/2015

I am contacting you to ask if you would be willing to consider participating in my study. I seek individuals who have been practicing as a PA in either specialty or primary care for a period of 12 to 28 months.

This study is confidential and your participation is voluntary. It poses minimal risks that are no greater than the risks ordinarily encountered in daily life. I have attached an information sheet for your review that discusses the study in greater detail.

If you are willing to participate please contact me by phone or email at your earliest convenience. My email address is name@tamu.edu and my phone number is (xxx) xxx-xxxx.

Sincerely,

Glenn Forister, PA-C
PhD Student Texas A&M

IRB NUMBER: IRB2014-0393D
IRB APPROVAL DATE: 07/08/2014
IRB EXPIRATION DATE: 07/01/2015

APPENDIX B

CONSENT FORM PHASE ONE

TEXAS A&M UNIVERSITY HUMAN SUBJECTS PROTECTION PROGRAM
CONSENT FORM

Project Title: Novice Physician Assistant Transfer of Learning During the Transition to Clinical Practice- Phase 1

You are invited to take part in a research study being conducted by James Glenn Forister, a researcher and doctoral student from Texas A&M University. The information in this form is provided to help you decide whether or not to take part. If you decide to take part in the study, you will be asked to sign this consent form. If you decide you do not want to participate, there will be no penalty to you, and you will not lose any benefits you normally would have.

Why Is This Study Being Done?
The purpose of this study is to describe transfer of learning in novice Physician Assistants (PAs) as they transition from formal training into clinical practice.

Why Am I Being Asked To Be In This Study?
You are being asked to be in this study because you are a licensed PA in the state of Texas with 12 to 28 months of clinical practice experience.

How Many People Will Be Asked To Be In This Study?
10 to 12 people (participants) will be invited to participate in this phase of the study. Overall, a total of 25 to 27 people will be invited to participate across the state of Texas.

What Are the Alternatives to being in this study?
None, the alternative to being in the study is not to participate.

What Will I Be Asked To Do In This Study?
You will be asked to answer questions about learning and the transition to clinical practice during a private semi-structured interview. Following the interview, you will be asked to assess the accuracy of the researcher's interpretation of your answers. Your participation in this study will last up to two hours and includes one visit and one follow-up contact by phone and/or email.

Visit 1: A face-to-face interview will be conducted at your clinic or other site of your choice that will facilitate a private conversation. This visit will last about 45 to 60 minutes. The questions will relate to learning during the transition from PA school to clinical practice. If permitted, the field researcher will conduct the session at your clinic site. If you prefer, you may choose an alternate site to ensure privacy.

Follow-up contact: 2 to 3 weeks following the interview, the researcher will contact you by phone and/or email and review the interpretation of data taken from your interview. You will be asked to read the excerpts to ensure they have not been used inappropriately in the research report.

Will Photos, Video or Audio Recordings Be Made of Me during the Study?
The researcher will make an audio recording during the study so that verbatim transcripts can be produced only if you give your permission to do so. Indicate your decision below by initialing in the space provided.

IRB NUMBER: IRB2014-0393D
IRB APPROVAL DATE: 07/08/2014
IRB EXPIRATION DATE: 07/01/2015

_____ I give my permission for audio recordings to be made of me during my participation in this research study.

_____ I do not give my permission for audio to be made of me during my participation in this research study.

Are There Any Risks To Me?
The things that you will be doing are no more/greater than risks than you would come across in everyday life. A breech of confidentiality could result in damage to your professional reputation, employability, and financial standing. To minimize this risk, the interview should be conducted in private. You will be asked to provide a pseudonym for use in data collection and reporting. When contacting you by phone, the investigator will not reveal the purpose of the call to third parties. Documents sent to your for review will only be associated with a pseudonym you provide.

Although the researcher has tried to avoid risks, you may feel that some interview questions are stressful or upsetting. You do not have to answer anything you do not want to.

Are There Any Benefits To Me?
The only direct benefits to you are the opportunity to reflect on your learning during the transition to practice and any satisfaction you derive from helping produce information about the PA profession.

Will There Be Any Costs To Me?
Aside from your time, there are no costs for taking part in the study.

Will I Be Paid To Be In This Study?
You will not be paid for being in this study.

Will Information From This Study Be Kept Private?
The records of this study will be kept private. No identifiers linking you to this study will be included in any sort of report that might be published. Research records will be stored securely and only J. Glenn Forister, PA-C, Dominique Chlup, EdD, Elsa M. González, PhD will have access to the records.

Information about you will be stored in locked file cabinet and/or in computer files protected with a password and stored on an encrypted drive or server. This consent form will be filed securely in an official area.

People who have access to your information include the Principal Investigator and research study personnel. Representatives of regulatory agencies such as the Office of Human Research Protections (OHRP) and entities such as the Texas A&M University Human Subjects Protection Program may access your records to make sure the study is being run correctly and that information is collected properly.

IRB NUMBER: IRB2014-0393D
IRB APPROVAL DATE: 07/08/2014
IRB EXPIRATION DATE: 07/01/2015

TEXAS A&M UNIVERSITY HUMAN SUBJECTS PROTECTION PROGRAM
CONSENT FORM

Who may I Contact for More Information?
You may contact the Principal Investigator, Dominique Chlup, EdD, to tell her about a concern or complaint about this research at (xxx) xxx-xxxx or by email name@tamu.edu. You may also contact the Protocol Director, James Glenn Forister at (xxx) xxx-xxxx or by email name@tamu.edu. You may also contact the co-investigator, Elsa M. González, PhD at (xxx) xxx-xxxx or by email name@tamu.edu.

For questions about your rights as a research participant; or if you have questions, complaints, or concerns about the research, you may call the Texas A&M University Human Subjects Protection Program office at (979) 458-4067 or irb@tamu.edu.

What if I Change My Mind About Participating?
This research is voluntary and you have the choice whether or not to be in this research study. You may decide to not begin or to stop participating at any time. If you choose not to be in this study or stop being in the study, there will be no effect on your current or future relationships with Texas A&M University.

STATEMENT OF CONSENT
I agree to be in this study and know that I am not giving up any legal rights by signing this form. The procedures, risks, and benefits have been explained to me, and my questions have been answered. I know that new information about this research study will be provided to me as it becomes available and that the researcher will tell me if I must be removed from the study. I can ask more questions if I want. A copy of this entire consent form will be given to me.

_____ _____
Participant's Signature Date

_____ _____
Printed Name Date

INVESTIGATOR'S AFFIDAVIT:
Either I have or my agent has carefully explained to the participant the nature of the above project. I hereby certify that to the best of my knowledge the person who signed this consent form was informed of the nature, demands, benefits, and risks involved in his/her participation.

_____ _____
Signature of Presenter Date

_____ _____
Printed Name Date

IRB NUMBER: IRB2014-0393D
IRB APPROVAL DATE: 07/08/2014
IRB EXPIRATION DATE: 07/01/2015

APPENDIX C

CONSENT FORM PHASE TWO

TEXAS A&M UNIVERSITY HUMAN SUBJECTS PROTECTION PROGRAM
CONSENT FORM

Project Title: Novice Physician Assistant Transfer of Learning During the Transition to Clinical Practice- Phase 2

You are invited to take part in a research study being conducted by James Glenn Forister, a researcher and doctoral student from Texas A&M University. The information in this form is provided to help you decide whether or not to take part. If you decide to take part in the study, you will be asked to sign this consent form. If you decide you do not want to participate, there will be no penalty to you, and you will not lose any benefits you normally would have.

Why Is This Study Being Done?
The purpose of this study is to describe transfer of learning in novice Physician Assistants (PAs) as they transition from formal training into clinical practice.

Why Am I Being Asked To Be In This Study?
You are being asked to be in this study because you are a licensed PA in the state of Texas with 12 to 28 months of clinical practice experience.

How Many People Will Be Asked To Be In This Study?
10 to 12 people (participants) will be invited to participate in this phase of the study. Overall, a total of 25 to 27 people will be invited to participate across the state of Texas.

What Are the Alternatives to being in this study?
None, the alternative to being in the study is not to participate.

What Will I Be Asked To Do In This Study?
If you agree to participate in this study, you will be asked to complete a sorting task and face-to-face interview with a field researcher. The sorting task involves sorting 45 cards containing statements about learning and clinical practice obtained from other novice PAs. You will be asked to sort the statements on a grid that relates each of the statements to your own experience and perspective. The sorting task should take 45 to 60 minutes to complete. The field researcher will conduct a post-sorting interview lasting 15 to 30 minutes to clarify your perspective. If you agree, the post-sorting interview may be audio recorded. The audio files will be exported to an encrypted hard drive along with any transcripts. The one-time visit should take 60 to 90 minutes in total. If permitted, the field researcher will conduct the session at your clinic site. If you prefer, you may choose an alternate site to ensure privacy.

Will Photos, Video or Audio Recordings Be Made of Me during the Study?
The researcher will make an audio recording during the study so that verbatim transcripts can be produced only if you give your permission to do so. Indicate your decision below by initialing in the space provided.

_____ I give my permission for audio recordings to be made of me during my participation in this research study.

IRB NUMBER: IRB2014-0393D
IRB APPROVAL DATE: 07/08/2014
IRB EXPIRATION DATE: 07/01/2015

_____ I do not give my permission for audio to be made of me during my participation in this research study.

Are There Any Risks To Me?
The things that you will be doing are no more/greater than risks than you would come across in everyday life. A breech of confidentiality could result in damage to your professional reputation, employability, and financial standing. To minimize this risk, the interview should be conducted in private. You will be asked to provide a pseudonym for use in data collection and reporting. When contacting you by phone, the investigator will not reveal the purpose of the call to third parties. Documents sent to your for review will only be associated with a pseudonym you provide.

Although the researcher has tried to avoid risks, you may feel that some interview questions are stressful or upsetting. You do not have to answer anything you do not want to.

Are There Any Benefits To Me?
The only direct benefits to you are the opportunity to reflect on your learning during the transition to practice and any satisfaction you derive from helping produce information about the PA profession.

Will There Be Any Costs To Me?
Aside from your time, there are no costs for taking part in the study.

Will I Be Paid To Be In This Study?
You will not be paid for being in this study.

Will Information From This Study Be Kept Private?
The records of this study will be kept private. No identifiers linking you to this study will be included in any sort of report that might be published. Research records will be stored securely and only J. Glenn Forister, PA-C, Dominique Chlup, EdD, Elsa M. González, PhD will have access to the records.

Information about you will be stored in locked file cabinet and/or in computer files protected with a password and stored on an encrypted drive or server. This consent form will be filed securely in an official area.

People who have access to your information include the Principal Investigator and research study personnel. Representatives of regulatory agencies such as the Office of Human Research Protections (OHRP) and entities such as the Texas A&M University Human Subjects Protection Program may access your records to make sure the study is being run correctly and that information is collected properly.

Who may I Contact for More Information?
You may contact the Principal Investigator, Dominique Chlup, EdD, to tell her about a concern or complaint about this research at (xxx) xxx-xxxx or by email name@tamu.edu. You may also contact the Protocol Director, James Glenn Forister at (xxx) xxx-xxxx or by email name@tamu.edu. You may also contact the co-investigator, Elsa M. González, PhD at (xxx) xxx-xxxx or by email name@tamu.edu.

IRB NUMBER: IRB2014-0393D
IRB APPROVAL DATE: 07/08/2014
IRB EXPIRATION DATE: 07/01/2015

TEXAS A&M UNIVERSITY HUMAN SUBJECTS PROTECTION PROGRAM
CONSENT FORM

For questions about your rights as a research participant; or if you have questions, complaints, or concerns about the research, you may call the Texas A&M University Human Subjects Protection Program office at (979) 458-4067 or irb@tamu.edu.

What if I Change My Mind About Participating?
This research is voluntary and you have the choice whether or not to be in this research study. You may decide to not begin or to stop participating at any time. If you choose not to be in this study or stop being in the study, there will be no effect on your current or future relationships with Texas A&M University.

STATEMENT OF CONSENT
I agree to be in this study and know that I am not giving up any legal rights by signing this form. The procedures, risks, and benefits have been explained to me, and my questions have been answered. I know that new information about this research study will be provided to me as it becomes available and that the researcher will tell me if I must be removed from the study. I can ask more questions if I want. A copy of this entire consent form will be given to me.

_____ _____
Participant's Signature Date

_____ _____
Printed Name Date

INVESTIGATOR'S AFFIDAVIT:
Either I have or my agent has carefully explained to the participant the nature of the above project. I hereby certify that to the best of my knowledge the person who signed this consent form was informed of the nature, demands, benefits, and risks involved in his/her participation.

_____ _____
Signature of Presenter Date

_____ _____
Printed Name Date

IRB NUMBER: IRB2014-0393D
IRB APPROVAL DATE: 07/08/2014
IRB EXPIRATION DATE: 07/01/2015

APPENDIX D

Q SET

1. I feel like my employer should have provided more formalized training in the beginning.
2. I have this big fear that I don't know enough and may miss something.
3. My physical exam skills have gotten terrible because I don't use them.
4. I appreciate tough feedback because it helps me learn.
5. I work in a challenging environment that triggers me to learn.
6. I see patients with a multitude of acute problems and have to think about the worst causes and rule them out.
7. I learn a ton from the nurses.
8. You never get the subtleties of medicine from a textbook; you get them from people who have been in the field.
9. My transition to practice was sink or swim. I was on my own.
10. It took time for my supervising physician to learn how to work with a PA.
11. I know a wide variety of things about medicine, but not on a deep level.
12. I want to be the best at everything I do.
13. I kind of feel silly asking questions because it's usually something I should know at this point.
14. I feel comfortable with whatever patient problem comes in the door.
15. I am internally driven, disciplined, and focused.
16. No one really teaches you-- you have to take it upon yourself to learn.
17. To be honest, I haven't been able to spend a whole lot of time reading.
18. Anxiety about hurting patients is good because it teaches you and keeps you alert.
19. There has been a lot of extra learning I have had to do since PA school.
20. Once you've finished PA school and graduate, the last thing you want to do is pick up a book and read.
21. I learn by remembering patients I have seen with similar problems. It's all about repetition and becoming familiar with things to look for.
22. In PA school, I memorized a lot of information that just went away.
23. At first, I was uncertain, but now I'm confident I know what I am doing.
24. I used to be apprehensive about going to work, but now it's not so bad.
25. My supervising physician(s) is/are my best resource(s) for learning.
26. My supervising physician is there to answer questions but is not able to spend a lot of time going over things such as explaining pathology.
27. I had a reduced patient load when I started practicing.
28. I just feel lost because there are no other midlevels, PAs and NPs, to ask for help.
29. We are so busy that I don't have time to sit down and learn.
30. I was (or am) so overwhelmed with my autonomy as a PA.
31. I feel like, with this practice, it was about seeing me succeed and it was never to hang me out to dry.
32. I get together with my physician and go over cases in detail just to learn.
33. I don't feel like bothering the physician, I can usually find the answer somewhere else.
34. I feel comfortable asking questions and learning from the physician(s) I work with.
35. I frequently use a pocket manual that's short, to the point, and has a lot of algorithms.
36. I think have retained most of what I learned in PA school.
37. I frequently use one or more of the following: UptoDate, Medscape, Epocrates, e-Medicine, First Consult, or other online decision support tool.
38. At first, I shadowed my doctors and learned how they practice.
39. I don't get enough feedback about my performance.
40. There's so much in my practice that I didn't learn in PA school.
41. The physician(s) does/do not take the time to explain things to me.
42. I read the JAAPA journal every month because I feel like I need to keep up with general medicine.
43. After graduating PA school, I went through a formalized training process designed by my employer.
44. My physician is very difficult to get a hold of so I go to the other PAs or NPs when I need help.
45. My physician(s) does/do not know how to utilize a PA.

APPENDIX E

OBSERVATION PROTOCOL

Observation Matrix—Novice PA Transfer of Learning

Date of Observation:
Time:
Length of Observation:
Location: ____Clinic ____Hospital ____Other
Observer:
Participant Pseudonym:

Permission granted to observe site: ____Yes ____No

Specified access limitations: ____Public Areas Only ____ Public Areas/Office

____ Off-site only ____ Other: _____

Description	Reflective Notes
PA Name Displayed: ____Yes ____No	
PA Business Cards Present: ____Yes ____No	
Designated PA Office Space: ____Yes ____No	
PA Interaction with Supervising Physician:	
PA Interaction with peer PAs or NPs:	
PA Interaction with Staff:	
PA or Staff Interaction with Patients:	

Additional Observations	Reflective Notes

IRB NUMBER: IRB2014-0393D
IRB APPROVAL DATE: 07/08/2014
IRB EXPIRATION DATE: 07/01/2015

APPENDIX F

INTERVIEW PROTOCOL

Interview Protocol—Novice PA Transfer of Learning

Date of Interview:
Time:
Location:
Interviewer:
Interviewee Pseudonym:
Specialty:
Time in Practice (months):

The purpose of this study is to describe how novice PAs use what they learned in school, in clinical practice. I am interviewing 10 to 12 PAs for this phase of the study. With your permission, I will record the data using a digital recorder. The audio file will be maintained on an encrypted drive with your pseudonym identifier to maintain confidentiality. The interview should take 45 minutes to one hour.
[Review and sign consent form]
[Start recorder]

1. Describe your clinical practice?

2. How would you describe the transition from PA school to practice?

3. How has your level of autonomy changed since you first started working?

4. What prior experiences (clinical or nonclinical) have helped you as a PA?

5. What motivates you?

6. How confident do you feel when providing patient care?

7. What aspects of clinical practice did you feel most prepared for as a result of your PA education?

8. What aspects of clinical practice did you feel least prepared for as a result of your PA education?

IRB NUMBER: IRB2014-0393D
IRB APPROVAL DATE: 07/08/2014
IRB EXPIRATION DATE: 07/01/2015

9. What content from PA school do you use regularly?

10. What content from PA school have you forgotten, if any?

11. What types of patient encounters are easy for you?

12. What types of patient encounters are challenging for you?

13. Can you explain what you do when you face a gap in your knowledge or skills?

14. How would you describe your relationship with your supervising physician?

15. How would you describe your physician's supervisory style?

16. How would you describe your relationship with peers?

17. How has your practice changed since you began working as a PA?

18. What cases do you treat now that you did not feel comfortable treating when you first started working?

19. What do you still need to learn to do your job the way you think it should be done?

20. Would you like to make any additional comments?

IRB NUMBER: IRB2014-0393D
IRB APPROVAL DATE: 07/08/2014
IRB EXPIRATION DATE: 07/01/2015

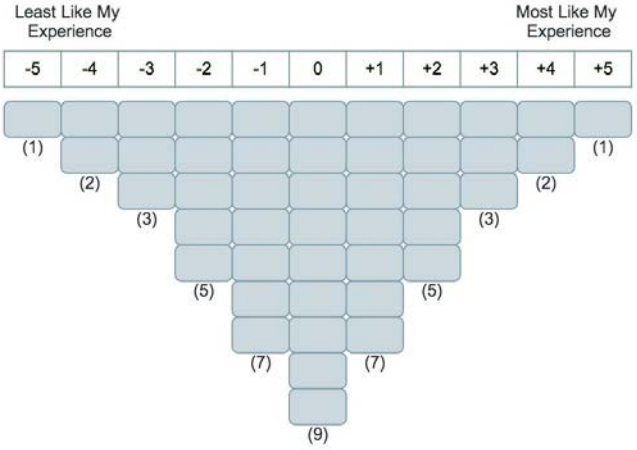
APPENDIX G

Q-SORT TRACKING FORM

Q-Sort Tracking Form

Date of Sort:
Time:
Location:
Researcher:
Participants Pseudonym:
Specialty:
Time in Practice (months):

The purpose of this study is to describe how novice PAs use what they learned in school, in clinical practice. I have interviewed a group of novice PAs and have sampled statements from the interviews to create a card deck. If you agree to participate, I will provide verbal instructions explaining the sorting procedure. You will be asked to sort the card deck in relation to your own experience and viewpoint.
The sorting procedure should take 45 minutes. A short interview lasting 15 to 30 minutes will follow in order to review your sort.
With your permission, I will record the interview data using a digital recorder. The audio file will be maintained on an encrypted drive with your pseudonym identifier to maintain confidentiality.



IRB NUMBER: IRB2014-0393D
IRB APPROVAL DATE: 07/08/2014
IRB EXPIRATION DATE: 07/01/2015

APPENDIX H

FACTOR ARRAY

Factor Array

No.	Statement	Item	1	2	3
1	I feel like my employer should have provided more formal	1	-3	4	1
2	I have this big fear that I don't know enough and may miss	2	2	-1	5
3	My physical exam skills have gotten terrible	3	-1	-4	-4
4	I appreciate tough feedback because it helps me learn	4	2	0	-1
5	I work in a challenging environment that triggers me	5	2	5	0
6	I see patients with a multitude of acute problems	6	1	3	1
7	I learn a ton from the nurses	7	-1	-4	2
8	You never get the subtleties of medicine from a textbook	8	1	2	1
9	My transition to practice was sink or swim	9	-5	2	4
10	It took time for my supervising physician to learn how to	10	-1	-1	-2
11	I know a wide variety of things but not on a deep level	11	1	0	0
12	I want to be the best at everything I do	12	5	4	1
13	I kind of feel silly asking questions	13	-2	-2	0
14	I feel comfortable with whatever patient problem comes in	14	0	0	-4
15	I am internally driven disciplined and focused	15	4	3	1
16	No one really teaches you, you take it upon yourself	16	-3	0	0
17	To be honest, I haven't been able to spend a whole lot of	17	-2	-2	0
18	Anxiety about hurting patients is good	18	0	1	-2
19	There has been a lot of extra learning since PA school	19	3	2	1
20	Once you've finished PA school and graduate, the last thing	20	-1	-1	3
21	I learn by remembering patients I have seen with similar	21	2	2	2
22	In PA school, I memorized a lot of information that went	22	0	-3	-1
23	At first I was uncertain but now I'm confident	23	0	3	-3
24	I used to be apprehensive about going to work	24	0	0	-3
25	My supervising physician is my best resource	25	1	0	-2
26	My supervising physician is there to answer questions	26	-1	-1	2
27	I had a reduced patient load when I started	27	3	-3	0
28	I just feel lost because there are no other midlevels	28	-3	-3	0
29	We are so busy that I don't have time to learn	29	0	1	4
30	I was so overwhelmed with my autonomy	30	-2	0	3
31	I feel like, with this practice, it was about seeing me	31	1	-1	-5
32	I get together with my physician and go over cases to learn	32	0	1	-3
33	I don't feel like bothering the physician	33	-2	1	2

34	I feel comfortable asking questions	34	4	1	-1
35	I frequently use a pocket manual	35	-2	-2	-1
36	I think I have retained most of what I learned in PA school	36	0	0	-1
37	I frequently use one or more of the following UptoDate, Med	37	1	1	1
38	At first, I shadowed my doctors and learned how they prac	38	3	-1	-1
39	I don't get enough feedback about me performance	39	-1	2	0
40	There's so much in my practice that I didn't learn in PA	40	2	1	3
41	The physician does not take the time to explain things	41	-4	0	-2
42	I read JAAPA journal every month	42	0	-2	-2
43	After graduating from PA school I went through formal train	43	1	-5	-2
44	My physician is very difficult to get a hold of so I go to	44	-4	-1	2
45	My physician does not know how to utilize a PA	45	-1	-2	-1

APPENDIX I

CRIB SHEETS

Crib Sheet for Factor 1: Transfer Partnership

Items ranked most like my experience
12. I want to be the best at everything I do. (+5)
15. I am internally driven, disciplined, and focused. (+4)
34. I feel comfortable asking questions and learning from the physician(s) I work with. (+4)

Items ranked higher for Factor 1 than other Factor Arrays
12. I want to be the best at everything I do. (+5)
34. I feel comfortable asking questions and learning from the physician(s) I work with. (+4)
15. I am internally driven, disciplined, and focused. (+3)
27. I had a reduced patient load when I started practicing. (+3)
38. At first, I shadowed my doctors and learned how they practice. (+3)
19. There has been a lot of extra learning since PA school. (+3)
21. I learn by remembering patients I have seen with similar problems. It's all about repetition and becoming familiar with things to look for. (+2)
4. I appreciate tough feedback because it helps me learn. (+2)
31. I feel like, with this practice, it was about seeing me succeed and it was never to hang me out to dry. (+1)
43. After graduating PA school, I went through a formalized training process designed by my employer. (+1)
11. I know a wide variety of things about medicine, but not on a deep level. (+1)
25. My supervising physician(s) is/are my best resource(s) for learning. (+1)

Items ranked lower for Factor 1 than other Factor Arrays
9. My transition to practice was sink or swim. (-5)
41. The physician(s) does/do not take the time to explain things to me. (-4)
44. My physician is very difficult to get a hold of so I go to the other PAs or NPs when I need help. (-4)
16. No one really teaches you-- you have to take it upon yourself to learn. (-3)
1. I feel like my employer should have provided more formalized training in the beginning. (-3)
13. I kind of feel silly asking questions. (-2).
33. I don't feel like bothering the physician, I can usually find the answer somewhere else. (-2)
30. I was (or am) so overwhelmed with my autonomy as a PA (-2)

Item ranked least like my experience
9. My transition to practice was sink or swim. (-5)
41. The physician does not take time to explain things to me. (-4)
44. My physician is very difficult to get a hold of so I go to the other PAs or NPs when I need help. (-4)

Other findings in the array to aid interpretation:
7. I learn a ton from the nurses (-1).
This disagreement suggests that physicians, not nurses, are the transfer partners for individuals sharing the Factor 1 perspective.

14. I feel comfortable with whatever patient problem comes in the door. (0)
The novices are cautious not to express complete comfort in dealing with patient problems. Compared with the disagreement in expressed in Factors 2 and 3, however, this perspective is the most comfortable of the three. By remaining neutral they avoid appearing overconfident.

22. In PA school, I memorized a lot of information that just went away. (0)
Both of the other factors disagree with this statement but this one is neutral.

28. I just feel lost because there are no other midlevels, PAs and NPs, to ask for help. (-3).
Like the Factor 2, this result indicates other midlevels were available.

Crib Sheet for Factor 2: Self-Reliant

Items ranked most like my experience

5. I work in a challenging environment that triggers me to learn. (+5)
1. I feel like my employer should have provided more formalized training in the beginning (+4)
12. I want to be the best at everything I do. (+4)

Items ranked higher for Factor 2 than other Factor Arrays

5. I work in a challenging environment that triggers me to learn. (+5)
6. I see patients with a multitude of acute problems and have to think about the worst causes and rule them out. (+3)
23. At first, I was uncertain, but now I'm confident I know what I am doing. (+3)
8. You never get the subtleties of medicine from a textbook; you get them from people who have been in the field. (+2)
1. I feel like my employer should have provided more formalized training in the beginning (+4)
39. I don't get enough feedback about my performance. (+2)
18. Anxiety about hurting patients is good because it teaches you and keeps you alert. (+2)
32. I get together with my physician and go over cases in detail just to learn. (+1)

Items ranked lower for Factor 2 than other Factor Arrays

43. After graduating PA school, I went through a formalized training process designed by my employer. (-5)
7. I learn a ton from the nurses. (-4)
22. In PA school, I memorized a lot of information that just went away. (-3)
27. I had a reduced patient load when I started practicing. (-3)
45. My physician(s) does/do not know how to utilize a PA. (-2)

Item ranked least like my experience

43. After graduating PA school, I went through a formalized training process designed by my employer. (-5)
7. I learn a ton from the nurses. (-4)
3. My physical exam skills have gotten terrible because I don't use them. (-4)

Other items aiding in the interpretation of Factor 2

15. I am internally driven, disciplined, and focused. (+3)

The position of this item is higher in Factor 1, but its position in Factor 2 also indicates a strong internal motivation for these participants.

9. My transition to practice was sink or swim. (+2)

This item is ranked much higher in factor 3, but remains important in describing the lack of support inherent in the Factor 2 perspective.

17. To be honest, I haven't been able to spend a whole lot of time reading. (-2)
20. Once you've finished PA school and graduate, the last thing you want to do is pick up a book and read. (-1)

Combined, these two statements suggest participants associated with Factor 2 spend time reading. They share this experience with those associated with Factor 1.

Crib Sheet for Factor 3: Insecure

Items ranked most like my experience
2. I have this big fear that I don't know enough and may miss something. (+5)
29. We are so busy that I don't have time to sit down and learn. (+4)

Items ranked higher for Factor 3 than other Factor Arrays
2. I have this big fear that I don't know enough and may miss something. (+5)
29. We are so busy that I don't have time to sit down and learn. (+4)
20. Once you've finished PA school and graduate, the last thing you want to do is pick up a book and read. (+3)
30. I was (or am) so overwhelmed with my autonomy as a PA. (+3)
26. My supervising physician is there to answer questions but is not able to spend a lot of time going over things such as explaining pathology. (+2)
44. My physician is very difficult to get a hold of so I go to the other PAs or NPs when I need help. (+2)
7. I learn a ton from the nurses. (+2)

Items ranked lower for Factor 3 than other Factor Arrays
31. I feel like, with this practice, it was about seeing me succeed and it was never to hang me out to dry. (-5)
14. I feel comfortable with whatever patient problem comes in the door. (-4)
24. I used to be apprehensive about going to work, but now it's not so bad. (-3)
23. At first, I was uncertain, but now I'm confident I know what I am doing. (-3)
32. I get together with my physician and go over cases in detail just to learn. (-3)
18. Anxiety about hurting patients is good because it teaches you and keeps you alert. (-2)
34. I feel comfortable asking questions and learning from the physician(s) I work with. (-1)

Item ranked least like my experience
31. I feel like, with this practice, it was about seeing me succeed and it was never to hang me out to dry. (-5)
14. I feel comfortable with whatever patient problem comes in the door. (-4)
3. My physical exam skills have gotten terrible because I don't use them. (-4)